

SUBJECT INDEX

A

- Absorption
 - and intestinal electrolyte transport, 135
 - processes
 - and ion transport, 136-37
- Acclimatory responses
 - of fishes, 4
- Acetaminophen
 - as antipyretic
 - in temperature control, 614
- Acetazolamide
 - and membrane fusion, 157
 - and NaCl transport, 136
 - and pH in epithelial cells, 383
- Acetylcholine
 - and endothelial cell metabolism, 335
 - endothelium-dependent responses, 307-8
 - formation of, 336
 - and organelle acidification
 - in *Torpedo californica*, 410
 - receptor
 - as neurotransmitter receptor, 461
 - and receptors regulating acid secretion, 90
 - and somatostatin in anterior pituitary function, 554
 - as a transmitter in sympathetic ganglia, 3
- Acetyl LDL
 - functional activity in liver, 124
 - as "scavenger receptor", 122
- Acetyl-CoA
 - and pH dependences of intracellular processes, 390-98
- Acid extrusion
 - and acid-base transport systems, 378
 - and pH in epithelial cells, 385
- Acidic intracellular organelles
 - see ATP-driven H^+ pumping
- Acidic phospholipids
 - and gentamicin
 - renal inositol phospholipids, 59
 - modeling membrane fusion, 203
 - trigger and contact, 204-5
- Acidification
 - and nominal absence of CO_2 , 357
- Acid loading
 - and transepithelial H^+ transport, 158
- Acidosis
 - and intracellular pH regulation, 352-53, 358-59
- Acid production
 - and hypoxia, 38
- Acromegaly
 - and GH hypersecretion, 580
 - and response to GHRH, 580-81
- Acrosomal tubules
 - and fertilization potential, 194
- Actin-binding protein
 - filamin
 - and pH-mediated cell regulation, 396-97
- Actinomyosin
 - and secretory exocytosis, 231
- Acute renal failure
 - and ischemia, 34
- Addison's disease
 - ACTH secretion in, 530
 - and neuroendocrine role of CRF, 479
- Adenine nucleotides
 - and endothelium-dependent responses, 316
 - and protection against ischemic injury, 44
 - and pulmonary endothelium, 268
- translocase
 - and ATP in renal function, 18
- Adenohypophyseal hormone secretion
 - see Corticotropin releasing factor
- Adenosine
 - and ATP in renal function, 16
 - and capillary endothelial transport, 326
 - and endothelium-dependent responses, 313, 316
 - and neuronal receptors, 467
- Adenosine 5'-triphosphate
 - see ATP
- Adenosine monophosphate
 - see AMP
- S-adenosylhomocysteine
 - and capillary endothelial transport, 324
- Adenylate cyclase
 - and corticotropin releasing factor (CRF), 476
- and endothelial biogenic amines, 340
- growth factors and pH, 371
- and muscarinic cholinergic agonists, 110
- occupation of secretin receptors, 115
- pituitary regulation by somatostatin, 562-63
- and receptors on brain capillaries, 246
- and salivary secretion, 78
- and secretagogue receptors, 103
- Adhesion
 - of bilayer membranes
 - figure, 206
- ADP
 - and activities of pulmonary endothelium, 265
 - and decomposing hydrogen peroxides, 663
- Adrenal chromaffin cells
 - and osmotic forces in exocytosis, 175
- Adrenal medulla
 - and neural grafting, 449
- Adrenergic receptors
 - and acid secretion, 97
- Adrenoceptor activation
 - and salivary secretion, 78
- Adrenocorticotrophic hormone
 - as antipyretic
 - in temperature control, 614
 - and opioid peptides, 530-31
 - and pituitary regulation, 562
 - regulation by hypothalamus, 475
 - secretion
 - somatostatin inhibiting, 560
 - and temperature control, 613
- Aequorin
 - and voltage-dependence of sperm-egg fusion, 196
- Aerobic metabolism
 - and ATP in renal function, 17
- Afferent input
 - and neuronal thermosensitivity, 647
- Afferent nerve fibers
 - and temperature regulation, 596
- Age-dependent neurodegenerative diseases
 - see Neural grafting in the aged rat brain

- Aggrehore fusion
and hormonal regulation of
transport, 215
- Aging
and free radical biology,
664
- Agonists
and salivary secretion, 75
- Air pollution
nitrogen dioxide in, 657
- Albumin
and the endothelial cell sur-
face, 284, 286
- Aldehydes
and bactericidal oxidant pro-
duction, 675
- Aldosterone
and hormonal regulation of
transport, 217
- Allopurinol
protection against renal isch-
emia, 44
- Allylic hydrogen
and antioxidant defenses in the
lung, 695
- Alpha₂-adrenergic agonists
and endothelium-dependent re-
sponses, 314
- Alpha-bungarotoxin
and neuronal receptors, 461
- Alpha waves
early research, 3
- Alveolar hemorrhage
and free radical production,
703
- Alveolitis
and paraquat poisoning, 682
- Alzheimer's disease
see Neural grafting in the aged
rat brain
- Ambient heat stress
and hypothalamic temperature,
606
- Ambient thermal stimulation
and the integrative pathway,
607
- Ambystoma tigrinum*
and acid-base transport, 379
- Amidation
and neuroendocrine peptide
genes, 433
- Amiloride
and brain capillary endothe-
lium, 243
and intracellular pH regula-
tion, 363-72
Na/HCO₃-Cl/H exchange,
380
- Amine oxidases
and endothelial biogenic
amines, 338
- Aminergic systems
and neural grafting, 456
- Amines
and neurochemical control of
body temperature, 619
- Amino acid
metabolism
and hypoxia, 39
receptors for neurotransmitters
identification of, 466
and secretagogue receptors,
106
sequences
and neuroendocrine peptide
genes, 436
transport
and brain capillary proper-
ties, 244
- Amino acidine
and organelle acidification,
404
- Aminothylimidazole
and endothelial biogenic
amines, 336
- Aminofluorene
and incidence of radical ions,
659
- Aminoglycoside nephrotoxicity
and calcium, 66
- Aminoglycosides
effects of
on renal phosphoinositides,
65
- Ammonia
role of
in modulating cAMP, 395
- AMP
and capillary endothelial trans-
port, 324, 328
cyclic
and corticotropin releasing
factor, 476
enzyme secretion in salivary
glands, 85
and exocytosis, 226
and gonadotropin releasing
hormone, 503
and inositol phospholipid
metabolism, 51
interaction of in intestinal
transport, 144-45
and pH dependences, 390-
98
and pH in epithelial cells,
384
and pH-mediated cell regu-
lation, 394
and pituitary regulation by
somatostatin, 562
receptors for secretagogues
that increase, 113
and receptors on brain
capillaries, 246
and salivary secretion, 75-
77
- and secretagogue receptors,
103
and thyrotropin-releasing
hormone, 520
synthesis
in vascular prostaglandin
metabolism, 252
- Amphibians
CNS thermoreceptors in, 641-
42
skeletal muscle
and intracellular pH regula-
tion, 352-53
- Amylase secretion
and action of cholecystokinin,
104
cabachol stimulation of, 110
GHRH immunoreactivity,
575
- Anaphylatoxins
in pulmonary endothelium,
266, 268
- Anesthesia
sensitivities to
and cutaneous thermorecep-
tors, 630
- Angina
and calcium antagonist drugs,
465-66
- Angiotensin
and endothelial biogenic
amines, 342
endothelium-dependent re-
sponses, 307
and pulmonary endothelium,
268
- Angiotensin I converting enzyme
and the endothelial cell sur-
face, 282
- Anion exchange
contribution of
to pH, 355
- Anion exchange inhibitor
and vertebrate muscle pH
regulation, 351
- Anion permeability sequence
and osmotic forces in ex-
ocytosis, 178
- Anorexia nervosa
and GH hypersecretion, 580
LH response to naloxone,
531
- Anoxia
and endothelial biogenic
amines, 341
and endothelium-dependent re-
sponses, 316
and paraquat poisoning, 683
and relation to blood flow, 33-
34
- Anoxic perfusion
and glomerular filtration,
37

- Anterior pituitary
 - function
 - see Substance P and neurotensin
 - hormones
 - and corticotropin releasing factor, 476
 - and opioid peptides, 528-30
 - and neurotensin immunoreactivity, 544
 - regulation
 - physiological role of somatostatin in, 554-60
 - and substance P-like immunoreactivity, 539
- Anthracyclin anticancer drugs
 - and free radical formation in the lung, 682
- Antibiotics
 - as membrane markers, 164
- Antibodies
 - and the GnRH receptor, 502
 - growth factors and pH, 371
- Anti-calmodulin antibody
 - and secretory exocytosis, 233
- Anticancer drugs
 - and oxy-radicals, 660
- Anticholinergic agents
 - and receptors regulating acid secretion, 92
- Antigenic determinants
 - and endothelial cell surface, 285
- Antigens
 - and sperm-egg fusion, 198
- Antiluminal membrane
 - and brain capillary endothelium, 243
- Antioxidant defenses
 - in the lung, 693-99
- Antioxidant enzymes
 - activity in hyperoxia, 705
- Antipyresis
 - central mechanisms, 614
- Antipyretic peptides
 - and temperature control, 613-15
- Antisera
 - and cell adhesion molecules, 418
- Anti-S serum
 - and pituitary regulation by somatostatin, 555
- Antithrombin III
 - and activities of pulmonary endothelium, 265
 - and the endothelial cell surface, 280
- Apical plasma membrane
 - exocytic insertion of H⁺ ATPases, 154
 - and hormonal regulation of transport, 214
 - and sodium transport, 136
- Apolipoprotein B
 - liver as site of terminal catabolism, 119
- Apoproteins
 - in chylomicrons, 120
 - and hepatic lipoprotein receptors, 121
- Apposition
 - in membrane fusion, 201
- Arachidonate
 - hyperthermic responses to, 614
 - as marker of renal cell injury, 36
- Arachidonic acid
 - and bactericidal oxidant production, 674
 - and endothelium-dependent responses, 308
 - and prostaglandin metabolism, 251
 - and renal inositol phospholipids, 55
- Arachidonic acid derivatives
 - and temperature control, 618-20
- Arcuate nucleus
 - lesions of
 - and GH deficiency, 583
- Arginine-vasopressin
 - potentiating the effect of CRF, 477
 - and temperature control, 613-14
- Aromatic hydrocarbons
 - and antioxidant defenses in the lung, 696
- Arterial cell interactions
 - arterial repair following endothelial denudation, 301-2
 - and endothelial denudation, 296-97
 - endothelial-smooth muscle interactions in culture, 298-300
 - phenotypic modulation of smooth muscle, 297-98
- Ascorbic acid
 - activity in hyperoxia, 705
 - reaction with superoxide, 672-73
- Asialoglycoproteins
 - and lipoprotein catabolism, 125
- Aspartate
 - identification of, 466
- Astrocytes
 - relationship between endothelial cells, 243-45
- Atelectasis
 - and free radical production, 703
 - and pulmonary oxygen toxicity, 721
- Atherosclerosis
 - and endothelium-dependent responses, 314
- ATP
 - concentration
 - in ischemia, 34
 - depletion
 - and ischemic damage, 14
 - mechanism of hydrolysis and organelle acidification, 406, 408
 - and neuronal receptors, 467
 - and osmotic forces in exocytosis, 175
 - and renal cell function alterations in production, 19-26
 - ATP synthesis, 17-19
 - utilization of ATP, 10-17
 - synthesis
 - in the kidney, 17-19
- ATP-driven H⁺ pumping into intracellular organelles
 - measuring organelle acidity, 403-4
 - which organelles are acidic, 404-5
- ATP-inhibited enzyme
 - and pH dependent in, 391
- ATP-MgCl₂
 - as protection against ischemic injury, 43
- ATPase
 - and Ca²⁺ exit
 - across the plasma membrane, 143
 - electrogenicity of
 - and organelle acidification, 405-6
- Atropine
 - and salivary activation mechanisms, 83
- Autocoids
 - endothelial biogenic amines, 342
 - and endothelium-dependent responses, 314
- Autonomic responses
 - thermosensitivity
 - and the PO/AH, 640
- Autoxidation reactions
 - see Antioxidant defenses
- Axodendritic synapses
 - and substance P, 538
- Azide
 - and organelle acidification, 406

B

- Bactericidal oxidant production
 - bactericidal activity, 672-74
 - physiological implications, 674-75
 - superoxide and hydrogen peroxide, 669-72
- Bacteriophage
 - and neuroendocrine peptide genes, 433
- Basal lamina
 - and arterial cell interactions, 295
- Base transport
 - and pH regulation in epithelial cells, 377
- Basolateral K conductance
 - Ca²⁺ activating, 140
- Basolateral membrane
 - permeability of
 - and osmotic swelling, 169
 - regulation of
 - and epithelial transport, 216-17
- Benzodiazepine receptors
 - pharmacologic actions of, 463
- Benzomorphan opiates
 - and neuronal receptors, 462
- Beta-endorphin
 - and neuronal receptors, 462
- Beta-galactosidase
 - and gonadotropin releasing hormone, 498
- Bicarbonate
 - and cholinergic receptors
 - in acid secretion, 94
 - and Mg-ATPase activity, 13
- Bilirubin
 - reaction with superoxide, 672-73
- Binding affinity
 - and growth hormone releasing hormone, 574
- Binding inhibition curves
 - and secretagogue receptors, 109
- Binding proteins
 - and vascular prostaglandin metabolism, 257
- Binding sites
 - and the endothelial cell surface, 283
- Bioenergetic hypoxia
 - versus metabolic hypoxia, 37-41
- Biogenic amines
 - see Endothelial cells, metabolism
- Biorhythms
 - and substance P, 539
- Biphasic prolactin secretion
 - TRH stimulation of, 520-21

Birds

- CNS thermoreceptors in, 641
- Bladder
 - and H⁺ transport, 154
- Blastocladia*
 - and pH-mediated cell regulation, 397
- Bleomycin
 - and free radical formation in the lung, 682
- Blood
 - coagulation
 - and the endothelial cell surface, 289
 - components
 - see Endothelial cells
 - flow
 - and the PO/AH in mammals, 640
 - pH
 - and pulmonary endothelium, 263
 - pressure
 - pulmonary endothelium influence on, 263
- Blood-tissue exchange
 - and capillary endothelial transport, 322-24
- Bombesin
 - and heat-escape behavior, 617
 - and pituitary regulation by somatostatin, 558
 - receptors for
 - on pancreatic acinar cells, 107
 - and secretagogue receptors, 106
- Bradykinin
 - and endothelial biogenic amines, 341
 - and endothelium-dependent responses, 316
 - and vascular prostaglandin metabolism, 251
- Brain
 - capillaries
 - receptors on, 246-47
 - relationship between astrocytes and endothelial cells, 243-45
 - relationship between transport and metabolism, 245-46
 - damage
 - behavioral consequences of, 447
 - and polyphosphoinositides, 57
 - synapses
 - and cell adhesion molecules, 417
 - toxic manifestations of hyperoxia in, 709

Brainstem lemniscal pathways and temperature regulation, 599-600

Bromophenacyl bromide and endothelium-dependent responses, 309

Bronchial carcinoids and abnormal production of factors with growth hormone-releasing activity, 569

Brown adipose tissue and temperature regulation, 603

Brush border membrane and ATP, 13 and brief renal ischemia, 37 and NaCl transport, 136 proximal tubular and calcium-magnesium ATPase, 58

Butyrate in exocytosis, 160

C

- Ca²⁺-calmodulin
 - in regulation of basal NaCl absorption, 142
- Ca²⁺/cAMP intestinal transport
 - cellular mechanisms of ion transport, 136-38
 - electrolyte transport by intracellular mediators, 138-46
- Caerulein
 - and secretagogue receptors, 105
- Calcium
 - and acidic phospholipids, 59
 - and action of growth hormone releasing hormone, 574
 - and aminoglycoside nephrotoxicity, 66
 - and bactericidal oxidant production, 670
- binding
 - and gap junctional communication, 398
- and endothelial biogenic amines, 340
- and exocytic insertion of proton pumps, 157
- intracellular stores
 - and electrolyte transport, 141
- intracellular free Ca²⁺ and pH-mediated cell regulation, 391-95
- in mediation of actions of GnRH, 509-10
- and membrane fusion, 218

- and muscarinic agonists in transepithelial H^+ transport, 153
- and Na^+-H^+ exchange, 359
- and osmotic forces in exocytosis, 175
- and osmotic swelling, 169
- role in cutaneous thermoreceptors, 633
- and salivary secretion, 75
- as a second messenger for GnRH, 503-5
- and secretagogue receptors, 103
- and somatostatin secretion from the hypothalamus, 553
- and stimulus-secretion coupling, 228
- and thyrotropin-releasing hormone stimulation of secretion, 517-18
- and voltage-dependence of sperm-egg fusion, 196
- see also $Ca^{2+}/cAMP$
- Calcium antagonist receptors
 - clinical importance
 - in treating cardiac disease, 465-66
- Calcium-dependent protein kinase C
 - and renal inositol phospholipids, 53
- Calcium outflux
 - and CCK receptors, 108
- Calcium pathways
 - interactions of in intestinal transport, 145
 - stimulus permeability coupling in, 77
- Calcium reabsorption of the nephron, 12
- Calcium-sensitive protein kinase and secretagogue receptors, 103
- Calcium transport
 - and gentamicin, 66
- Calmodulin
 - and GnRH, 505
 - and pH-mediated cell regulation, 392-94
- Caloric intake
 - and temperature regulation, 603
- Candidacidal activity
 - and bactericidal oxidant production, 674
- Canine fundic mucosal cells
 - receptors on
 - for regulating acid secretion, 94
- Capillary endothelial transport
 - indicator dilution estimation of mechanisms of transport, 326-28
 - transporter kinetics, 328-32
- Carbachol
 - and intestinal transport, 141
 - and receptors regulating acid secretion, 92
 - and secretagogue receptors, 106
- Carbohydrates
 - in N-CAM, 420
 - osmotic forces in exocytosis, 184
- Carbon dioxide
 - and activity of cold receptors, 633
- Carbonic anhydrase
 - and NaCl transport, 136
 - and pH in epithelial cells, 383
 - and pulmonary endothelium, 268
- Carbon tetrachloride
 - and free radical formation in the lung, 682
 - and free radical toxicity in lung, 688
 - and the production of oxy-radicals, 659
- Carbonylcyanide-p-trifluoromethoxyphenylhydrazone
 - and ATP in renal function, 20
- Carboxyl groups
 - methylation of
 - and secretory exocytosis, 234
- Carboxyl terminal amino acids
 - and gonadotropin releasing hormone, 496
- Carboxypeptidase N
 - and pulmonary endothelium, 268
- Carboxy-terminal amidation
 - and neuroendocrine peptide genes, 433
- Carcinogen
 - initiation of tumor by
 - and subsequent promotion, 661
- Carcinoma cells
 - growth factors and pH, 365
- Cardiac arrhythmias
 - and calcium antagonist drugs, 465-66
- Cardiac muscle
 - and endothelial biogenic amines, 338
 - and pH regulation, 353-56
- Cardiac output
 - in ischemia, 34
- Cardiolipin
 - and irreversible renal ischemia, 36
- Carnitine synthesis
 - and hypoxia, 39
- Catalase
 - activity in hyperoxia, 705
 - and antioxidant defenses in the lung, 694
 - decomposing hydrogen peroxides, 663
 - as protection against oxygen toxicity, 712
 - pulmonary H_2O_2 scavenging by, 698
- Catecholamines
 - and endothelial cell metabolism, 335
 - and endothelium-dependent responses, 311
 - formation and role of
 - in endothelial cell metabolism, 336
 - and interaction of corticotropin releasing factor, 478
 - and osmotic forces in exocytosis, 175
- Cell adhesion molecules
 - in neural histogenesis
 - chemical structures, 418-20
 - histologic appearance, 420-22
 - modulating and binding mechanisms, 422-24
 - regulatory cycle
 - figure, 425
 - regulatory events, 424-27
 - spatiotemporal distribution, 417
- Cell destruction
 - and pulmonary oxygen toxicity, 721
- Cell growth
 - and inositol phospholipid metabolism, 51
- Cell metabolism
 - and intracellular acid loading, 378
 - and intracellular pH, 363
- Cellular oxygen supply
 - and mitochondrial function, 41-43
- Cellular phospholipids
 - and thyrotropin-releasing hormone, 516
- Central nervous system
 - mediation of temperature control
 - role of neurotransmitters in, 613
 - and neural grafting, 449-50
 - and thermal regulation, 595-608

- Central thermal stimulation
comparative studies of, 640-42
- C fibers
as cutaneous thermoreceptors, 629
- Channel proteins
phosphorylation of
and TRH stimulation of secretion, 523
- Charge perturbation model
N-CAM binding
figure, 423
- Chemical mapping
of endothelial cell surface, 280-85
- Chemical sorting
and endothelial cell surface, 288
- Chemiosmotic processes
and MgATP, Cl-dependent lysis, 179-81
- Chemotaxis
and bactericidal oxidant production, 674
and pH-mediated cell regulation, 392
- Chemotransmitters
and secretory function in the fundic mucosa, 96
- Childhood development
and growth hormone releasing hormone studies, 577
- Chloride channel
and urinary acidification, 159
- Chlorine
see Ca^{2+} /cAMP
- Chlorine secretion
 Ca^{2+} regulation of, 139
- Chlorpromazine
as protection against ischemic renal injury, 45
- Cholecystokinin
and receptors regulating acid secretion, 93
and somatostatin anterior pituitary function, 554
and secretagogue receptors, 104
and temperature control, 618
- Cholesterol
in chylomicrons, 120
loading
and plasma lipoprotein levels, 128
in modeling membrane fusion, 204
- Cholesteryl esters
of chylomicrons
in the liver, 120, 123
- Cholestyramine
altering LDL levels, 128
- Cholinergic activation
and endothelium-dependent responses, 310
- Cholinergic agents
parietal cell receptor specificity for, 91
- Cholinergic agonists
and activity of cold receptors, 633
- Cholinergic neurotransmission
and neural grafting, 455-56
- Cholinergic receptors
and oxygen consumption, 92
- Chondroitin sulfate ABC lyase
and arterial cell interactions, 300
- Chromaffin granules
and osmotic forces in exocytosis, 175
- Chylomicrons
liver as site of terminal catabolism, 119
remnant receptor
functional activity in liver, 124
role in catabolism, 120
triglycerides
in extrahepatic tissues, 120
- Cimetidine
and receptors regulating acid secretion, 91
- Circadian rhythm
and body temperature regulation, 605
- C kinase
in salivary glands, 84
- Cl-HCO_3 exchange
in epithelial cells, 378-79
- Cloning
neuroendocrine peptide genes, 434-37
- CO_2
affecting exocytosis and endocytosis, 160
and colchicine
in H^+ transport, 154
and intracellular pH regulation, 352-53, 397
in smooth muscle tissue, 356
- Coagulation system
molecules in endothelial cell surface, 283
- Colchicine
and CO_2
in H^+ transport, 154
and hormonal regulation of epithelial transport, 218-19
- Cold receptors
and maintenance of skin temperature, 626
- Collagen
type II
and arterial cell interactions, 301
- Collagenase
and receptors regulating acid secretion, 90
- Colloid osmotic swelling
and vesicle membrane ion permeability, 171
- Colloidal substance
and osmotic swelling, 168
- Conception
and gonadotropin releasing hormone (GnRH), 495
- Conduction velocities
for representative temperature receptors
figure, 627
- Congestion
and free radical production, 703
- Contact
as stage of membrane fusion, 202
- Contraceptives
and gonadotropin releasing hormone (GnRH), 495
and prolactin release, 529
- Contractile proteins
and secretory exocytosis, 230
- Convulsions
and free radical production, 703
- Cortical tubular acidic phospholipids
and PTH, 59
- Corticotropin releasing factor
neuroendocrine role of
activity in vitro, 476-78
activity in vivo, 478-83
centrally mediated actions, 483-85
receptors, 487
neural control of, 486-87
and neurotensin-like immunoreactivity, 543
and substance P, 541
- Cortisol release
naloxone stimulating, 530
- Critical lesion size
arterial cell interactions, 297
- Cross-fertilization
voltage-dependent
and sperm-egg fusion, 198
- Cushing's disease
ACTH secretion in
and opioid peptides, 530
and neuroendocrine role of CRF, 479
- Cutaneous temperature receptors
anatomical correlates, 630

- specificity of receptors, 629
temperature receptors, 626-29
transduction mechanism, 631-33
- Cyclic AMP (cAMP)
see AMP, cyclic
- Cyclic nucleotides
and osmotic swelling, 169
and secretagogue receptors, 106
- Cyclic tetradecapeptides
see Somatostatin
- Cycloheximide
and secretagogue receptors, 109
and TRH stimulation of secretion, 521
- Cyclooxygenase
and endothelium-dependent responses, 313
and renal ischemia, 37
- Cyclooxygenase inhibitors
and superoxide production, 671
- Cysteine
reaction with superoxide, 673-73
- Cytochalasin B
and hormonal regulation of transport, 217
and secretory exocytosis, 231
- Cytochrome
role in respiratory burst, 671
- Cytochrome C oxidase
and arterial cell interactions, 298
- Cytochrome C reduction
in hyperoxia, 706
- Cytochrome oxidase
and hypoxia, 39, 41
- Cytochrome P450-dependent monooxygenase
and antioxidant defenses in the lung, 696
- Cytoplasmic alkalization
and growth factors of pH, 366
- Cytoplasmic ascorbate
and organelle acidification, 411
- Cytoskeletal relationships
and osmotic swelling, 169
- Cytoskeleton
in epithelial transport, 217
and pH-mediated cell regulation, 396-97
and secretory exocytosis, 230
- Cytosol
and ATP in renal function, 27
- Cytosolic calcium
and renal inositol phospholipids, 55
- role of
in intracellular pH regulation, 370-71
- Cytosolic proteins
and secretory exocytosis, 233
- D**
- Dantrolene
and electrolyte transport, 141
- Decapeptides
and secretagogue receptors, 105
- Dehydrogenase
and endothelial biogenic amines, 336
- Dephosphorylation
of phosphoinositides, 60
- Desmethylinipramine
and capillary endothelial transport, 325
- Dexamethasone
growth hormone releasing hormone, 578
- Diabetes
and GH hypersecretion, 580
and renal inositol phospholipids, 61
renal pathology of, 67
and responsiveness of pituitary gland, 582
- Diacylglycerol
and action of phospholipase C, 53
breakdown of PI to, 79
formation
and growth factors and pH, 371
and hormonal regulation of transport, 219
and lipids in mechanism of GnRH action, 506
and membrane fusion, 209
role of
in intracellular pH regulation, 370-71
and secretory exocytosis, 228-30
and stimulus-secretion coupling, 228
- Diamine
and paraquat uptake, 684
- Diamine oxidase
and endothelial biogenic amines, 337, 339
- Dibutyl cyclic AMP
and brain capillary function, 247
- Dicarboxylate substrates
and anoxia, 43
- Dictyostelium discoideum*
and cyclic AMP
in pH-mediated cell regulation, 394
- DIDS (4,4'-diisothiocyanostilbene-2,2'-disulfonic acid)
and organelle acidification, 406
- Dietary modifications
and regulation of plasma lipoprotein levels, 127
- Dietary regulation
and hepatic LDL receptors, 131
- Differentiation
and inositol phospholipid metabolism, 51
- Diginitonin
and osmotic forces in exocytosis, 183
and secretory exocytosis, 229
- Diglyceride kinase
and renal inositol phospholipids, 57
- Dihydroperoxides
and bactericidal oxidant production, 675
- Dihydropyridines
and calcium antagonist drugs, 466
- Dihydroxy metabolites
and endothelium-dependent responses, 309
- Dimethylsulfoxide
as protection against ischemic renal injury, 45
- Dioleoylphosphatidylethanolamine
and modeling membrane fusion, 207
- Dioxygen reduction
see Antioxidant defenses
- Diphenylbutylpiperidine neuroleptics
and schizophrenia, 466
- Dipicolinic acid
and modeling membrane fusion, 203
- Disease
involving radical-mediated reactions
figure, 663
role of peripheral somatostatin in, 559
- Disulfonic stilbene
and Cl-HCO₃ exchange in epithelial cells, 378
- DNA
analysis
and opioid peptides, 527

- damage
 - and free radical toxicity in lung, 689
- degeneration of
 - and free radical biology, 664
- double helices
 - modeling neuroendocrine peptide genes, 431
- and irreversible injury following ischemia, 38
- recombinant
 - and neuroendocrine peptide genes, 431
- synthesis
 - growth factors and pH, 372
 - and intracellular pH regulation, 363-72
- DOPA-decarboxylase activity
 - and receptors regulating acid secretion, 90
- Dopamine
 - in brain capillaries, 245
 - in central control of temperature, 618
 - and endothelial biogenic amines, 336
 - and somatostatin in anterior pituitary function, 554
 - synthesis
 - and neural grafting, 456
- Dopamine agonists
 - hypothermic response and neurotensin, 616
- Dopamine-B-hydroxylase
 - and osmotic forces in exocytosis, 176
- Dorsal horn neurons (DHNs)
 - and temperature regulation, 596-97
- Down regulation
 - and the gonadotropin releasing hormone (GnRH), 510
- Drug receptors
 - endogenous neurotransmitter ligands for, 461
- Dynorphin
 - and neuronal receptors, 463
- E
- Ectotherms
 - thermoreceptors in, 641
- Edema formation
 - and free radical production, 703
- EDTA
 - decomposing hydrogen peroxides, 663
 - and receptors regulating acid secretion, 90
- Effector coupling
 - and gonadotropin releasing hormone, 500-2
- Effector mechanisms
 - and secretory exocytosis, 230-34
- Efrapeptin
 - and organelle acidification, 406
- Eicosanoid biochemistry
 - in endothelium, 251
- Electrical regulation
 - of sperm-egg fusion, 191-98
- Electrogenic pump
 - and the K:Na permeability ratio, 649
- Electrolyte transport
 - intestinal
 - and calcium uptake, 135
 - regulation of
 - by intracellular mediators, 138
- Electrophiles
 - and antioxidant defenses in the lung, 696
- Electrophysiology
 - of thermosensitive neurons, 642-45
- Electrostatic sorting
 - and endothelial cell surface, 287
- Embryogenesis
 - and cell adhesion molecules, 420
- Endocrine function
 - GnRH receptor in, 498-99
- Endocrine pathway
 - and regulation of acid secretion, 89
- Endocytic organelles
 - lipoprotein-filled
 - isolation and characterization of, 126
- Endocytosis
 - and organelle acidification, 404
 - receptor-mediated, 409
- Endogenous lectins
 - and the endothelial cell surface, 282
- Endogenous opioid peptides
 - and hypothalamo-pituitary function
 - anterior pituitary hormones, 528-30
 - opioid peptides, 527-28
 - posterior pituitary, 531-32
- Endoneurial O₂ consumption
 - and inositol transferase, 63
- Endoperoxides-hydroperoxides
 - and bactericidal oxidant production, 675
- β -Endorphin
 - and substance P, 541
- and temperature control, 616
- Endosomes
 - and organelle acidification, 404
- Endothelial cells
 - activation
 - and phagocytosis, 272
 - chemical mapping, 280-85
 - in studies of subtle injuries, 271
 - location of PGH synthase in, 256
 - metabolism of biogenic amines
 - metabolism, 338-41
 - receptor mediation, 340-41
 - relationship between
 - astrocytes, 243-45
 - surface antithrombogenicity, 289
 - see also Vascular prostaglandin metabolism
 - surface- and membrane-associated activities, 287-90
 - surface-associated plasma proteins, 286
 - surface charge-differentiated microdomains, 285-86
- Endothelial denudation
 - in arterial cell interactions, 296-97
- Endothelial transport
 - see Capillary endothelial transport
- Endothelial-derived growth factor (EDGF)
 - and arterial cell interactions, 299
- Endothelium
 - brain capillary
 - epithelial properties of, 242-43
 - see also Endothelial cells
- Endotoxin
 - and activities of pulmonary endothelium, 265
- Energy resonance transfer
 - modeling membrane fusion, 203
- Enkephalins
 - analogues
 - and opioid peptides, 530
 - and homology with GHRH, 572
 - thermoregulatory actions of, 617
- Enzyme secretion
 - and salivary activation mechanisms, 85
- Enzymes

- and the endothelial cell surface, 282
- receptor-like binding sites linked to, 467-68
- Enzymic oxidations
 - see Antioxidant defenses
- Enzymology
 - renal phosphoinositide metabolism, 56-66
- Epidermal growth factor (EGF)
 - and inhibition of acid secretion, 97
 - and intracellular pH regulation, 363-72
- Epinephrine
 - and endothelial biogenic amines, 336
 - and interaction of CRF, 477-78
 - and osmotic forces in exocytosis, 175
 - oxidation
 - in hyperoxia, 706
- Epithelial acid-base transport
 - regulation of intracellular pH by, 378-81
- Epithelial hormone responses
 - and vasopressin, 219
- Epithelial transport
 - see Hormonal regulation of epithelial transport
- Erythrocytes
 - and capillary endothelial transport, 324
- Erythropoiesis
 - in ischemia, 34
- Erythropoietin production
 - and hypoxia, 39
- Escherichia coli*
 - and bactericidal oxidant production, 674
- Estradiol
 - and regulation of plasma lipoprotein levels, 127
- Ethanol
 - and the production of oxyradicals, 659
- Ether inhalation
 - and somatostatin release from the median eminence, 556
- Evaporation
 - and temperature regulation, 606
- Excitatory responses
 - endothelium-dependent, 315-16
- Excitotoxin kainic acid
 - receptors for
 - identification of, 466
- Excretion
 - abnormal renal inositol, 61
- Exercise
 - and somatostatin release from the median eminence, 556
- Exocytosis
 - chemiosmotic hypothesis of, 235
 - morphology of, 226-28
 - and organelle acidification, 410-11
 - in osmotic forces, 167-71
 - role of
 - in transepithelial H⁺ transport, 158
 - see also Osmotic swelling of vesicles
 - Regulation of membrane fusion
 - Transepithelial H⁺ transport
- Extodeaminase
 - and capillary endothelial transport, 327
- Extrapituitary binding sites
 - and gonadotropin releasing hormone, 496-97
- F
 - Familial dysbetalipoproteinemia and hepatic LDL receptors, 130
 - Familial hypercholesterolemia and hepatic lipoprotein receptors, 129-30
 - Fatty acids
 - synthesis
 - in chylomicrons, 120
 - and free radical toxicity, 686
 - Fc receptors
 - in pulmonary endothelium, 270
 - Fenton reaction
 - and bactericidal oxidant production, 673
 - Ferritin
 - in arterial cell interactions, 296
 - conjugates
 - and the endothelial cell surface, 283
 - hydrazide
 - and endothelial cell surface, 281
 - Fertilization
 - and intracellular (pH), 363
 - and pH-mediated cell regulation, 392
 - see also Sperm-egg fusion
 - Fertilization membrane
 - formation of
 - in exocytosis, 167
 - Fetal lungs
 - gestational age-dependant activities in, 699
- Fever
 - endotoxin-induced
 - and administration of ACTH, 614
- Fiber outgrowth
 - in neural grafting, 450-51
- Fibrin deposits
 - and free radical production, 703
- Fibrinogen-fibrin
 - and the endothelial cell surface, 286
- Fibroblasts
 - and intracellular pH regulation, 363-72
- Fibronectin
 - phospholipid-binding protein and vesicle swelling, 165
 - in pulmonary endothelium, 269
- Fibrosis
 - and paraquat poisoning, 683
 - pulmonary
 - as side effect of bleomycin therapy, 683
- Fibrotic reaction
 - and pulmonary oxygen toxicity, 730
- Filamin
 - and pH-mediated cell regulation, 396
- Fishes
 - CNS thermoreceptors, 641
- Flavobacterium heparinum*
 - and arterial cell interactions, 299
- Flavoenzymes
 - and antioxidant defenses in the lung, 694
- Flavoprotein
 - reducing paraquat cation to its radical, 685
 - role in respiratory burst, 671
- Fluid reabsorption
 - and ATP in renal functions, 23
- Fluorescein-dextran
 - and organelle acidification, 404
- Fluorescent probes
 - as membrane markers, 164
- Focused destabilization
 - as stage of membrane fusion, 202
- Follicle stimulating hormone (FSH)
 - and gonadotropin releasing hormone (GnRH), 495
- Food consumption
 - and temperature regulation, 603

- Forskolin**
and pH in epithelial cells, 384
and pituitary regulation
by somatostatin, 562
- Free fatty acids**
and irreversible renal ischemia, 36
- Free radicals**
and endothelium-dependent responses, 310
production and hyperoxia
formation of reactive O_2
species, 706-9
reactions, 705
relative oxygen species in
oxygen toxicity, 709-16
toxicity in lung
disposition and localization,
684-85
mechanism of toxicity, 685-88
pathology in lung, 682-83
- Fundic mucosa**
dispersion and identification of
cells, 90
regulatory pathways and secretory
function, 98
see also Receptors regulating
acid secretion
- Fusogenic proteins**
and sperm-egg fusion, 198
- G**
- Gallbladder**
amphibian
and pH in epithelial cells,
383-84
- Gamma amino butyric acid**
function of benzodiazepine
recognition site, 463-64
and somatostatin in anterior
pituitary function, 554
- Gangliosides**
and osmotic forces in exocytosis, 167
- Gap junctional conductance**
and pH-mediated cell regulation,
397-98
- Gastric inhibitory peptide**
homology with GHRH, 572
- Gastrin**
action on the parietal cell, 97
affinity of
for CCK receptors, 105
parietal cell receptor specificity for, 91
and receptors regulating acid
secretion, 89
receptors on paracrine cells
and acid secretion, 94
- response**
within the fundic mucosa,
92
- Gating**
of permeant molecules
endothelial cell surface, 287
- Gene expression**
CAM
figure, 425
neuroendocrine peptide
analysis of, 438-42
- Genes**
molecular heterogeneity of
somatostatin, 552
- Genes encoding mammalian
neuroendocrine peptides**
special features of, 432-34
strategies for the analysis
of, 438-42
strategies for cloning, 434-37
- Genetic factors**
and free radical biology, 664
- Genetic hyperlipoproteinemias**
and hepatic lipoprotein receptors,
129-30
- Gentamicin**
and acidic phospholipids
renal inositol phospholipids,
59
and inhibition of phospholipase C, 65
- Gila monster venom**
increase in cellular cyclic
AMP, 114
- Glia**
and cell adhesion molecules,
420
- Glial cells**
and intracellular pH regulation,
363-72
- Glomerular filtration**
and anoxic perfusion, 37
- Glucagon**
homology with GHRH, 572
and pituitary regulation
by somatostatin, 558
- Glucocorticoids**
and ACTH secretion by anterior
pituitary cells, 478
altering GH secretion, 578
and pituitary regulation
by somatostatin, 562
- Gluconeogenesis**
and endothelial biogenic
amines, 336
- Gluconeogenic enzymes**
and ATP, 16
- Glucose**
in brain capillaries, 245
and brief renal ischemia, 37
competition
with inositol transporter, 67
- concentration**
somatostatin-mediated
effects of nutrients,
558-59
with inositol as transporter
and diabetes, 63
oxidation
and receptors regulating
acid secretion, 91
production
and ATP in renal functions,
23
suppressing GH levels, 579
and temperature regulation,
603
- Glutamate**
receptors for
identification of, 466
- Glutathione**
renal resistance to ischemic injury,
45
- Glutathione disulfide**
and hyperoxia, 708
- Glutathione peroxidase**
activity in hyperoxia, 705
and antioxidant defenses in the
lung, 695, 698
decomposing HO , 663
- Glycerol**
and inositol phospholipid
metabolism, 51
- Glycine**
and neuroendocrine peptide
genes, 433
receptors for
identification of, 466
- Glycocalyx**
molecular organization of,
279
and pulmonary endothelium,
268
- Glycolysis**
and pH dependences of intracellular
processes, 390-98
- Glycolytic enzymes**
and nonoxidative ATP production,
22
- Glycopeptides**
and free radical toxicity in
lung, 683
- Glycoprotein**
and endothelial cell surface,
281
and intracellular pH regulation,
363-72
and osmotic forces in exocytosis,
167
- Glycosaminoglycan**
and arterial cell interactions,
295
in pulmonary endothelium,
269

- Glycosuria
and marked inosuria, 60
- GMP
dibutyl cyclic
and brain capillary function, 247
- GnRH-effector system
utility of primary cell cultures, 502-3
- Golgi apparatus
and lipoprotein-filled endocytic organelles, 126
- Gonadal steroids
and substance P content in the anterior pituitary, 542
- Gonadocortin
and the gonadal receptor, 497
- Gonadotropin releasing hormone
mechanism of action of
calcium as second messenger, 503-5
calmodulin as intracellular receptor, 505-6
chemical features and configuration of, 495-96
effector system, 502-3
and neuroendocrine role of CRF, 483
molecular biology of, 499-500
radioligand assays, 496-97
receptor, 498-99
receptor-receptor interactions, 500-2
structure of, 497-98
- Gonadotropins
and opioid peptides, 530-31
and substance P, 541
- Grafting
see Neural grafting in the aged rat brain
- Graft survival
in neural grafting, 450-51
- Growth cone movement
and cell adhesion molecules, 422
- Growth factor
intracellular pH regulation
activation of Na^+/H^+ exchange, 368-71
in vascular prostaglandin metabolism, 252
- Growth hormone
autoregulation
role of somatostatin in, 556-57
deficiency
and clinical application of GHRH, 583
hypersecretion
syndromes of, 580-84
inhibitory factor
see Somatostatin mediation
- and injection of neurotensin, 544
and intravenous administration of substance P, 540
and opioid peptides, 529
- Growth hormone releasing hormone
clinical applications, 580-84
distribution and ontogeny of, 572-73
identification and sequence, 570-72
mechanism of action, 574-75
pharmacokinetics and physiologic actions, 575-80
- Growth inhibitor
and arterial cell interactions, 299
- GSH peroxidase
decomposing hydrogen peroxides, 663
- GTP-binding protein
and neuronal receptors, 462
- Guanine nucleotide binding protein
and pituitary regulation by somatostatin, 562
- Guanine nucleotides
and neuronal receptors, 462
- H
- Hair follicle receptors
as cutaneous thermoreceptors, 629
- Half-lives
oxy-radicals
estimates table, 662
- HDL
and chylomicron remnants in the liver, 122
- H^+ electrochemical gradient
across the chromaffin granule membrane
and exocytosis, 180
- Hemichordate
fusion of sperm and egg
figure, 192
- Hemipituitaries
and gonadotropin releasing hormone, 503
- Hemodynamic factors
endothelium-dependent responses, 312
- Hemodynamic shear stresses
and endothelium-dependent responses, 316
- Hemodynamic stimuli
and role of CRF, 481-82
- Hemoglobin
endothelium-dependent responses, 311
- Hemostasis
endothelium-dependent responses, 314
pulmonary endothelium, 263
substances involved in, 312
- Hemostatic properties
alterations in expression of, 264-65
- Heparan sulfate
arterial cell interactions, 302
and the endothelial cell surface, 280
proteoglycan
and arterial cell interactions, 295
- Heparin
and alterations in expression of, 264
- Heparinase
and arterial cell interactions, 299
- Hepatic lipoprotein receptors
catabolism of specific lipoprotein classes, 120-23
cellular sites of hepatic uptake, 123
intracellular pathway of lipoprotein catabolism, 125-26
plasma lipoprotein levels, 127-31
specific classes of receptors, 124-25
- Hepatic necrosis
and free radical toxicity in lung, 688
- Hippocampal formation
and neural grafting, 454
- Histaminase
and endothelial biogenic amines, 337
- Histamine
acid secretory response, 89
and endothelial biogenic amines, 341
and endothelial cell metabolism, 335
and the endothelial cell surface, 283
and endothelium-dependent responses, 316
formation and role of, 336
parietal cell receptor specificity for, 91
and vascular prostaglandin metabolism, 251
- Histamine methyltransferase (HMT)
and endothelial biogenic amines, 339
- Histamine release
regulation of

- from fundic mucosal stores, 95-96
- Histidine**
 - and antioxidant defenses in the lung, 694
- Histogenesis**
 - see Cell adhesion molecules
- Homeostasis**
 - endothelial biogenic amines, 342
 - and the endothelial cell surface, 279
 - and pulmonary endothelium, 263
 - and temperature regulation, 607
- Hormonal regulation of epithelial transport**
 - role of membrane fusion
 - regulation of apical membrane, 214-16
 - regulation of basolateral membrane, 216-17
 - regulation of intracellular components, 217-19
- Hormone receptors**
 - and brain capillary function, 247
- Hormones**
 - and the endothelial cell surface, 284
 - endothelium-dependent responses, 314
 - episodic secretion of
 - in exocytosis, 225
 - and receptors regulating acid secretion, 89
 - responsiveness of neurotensin in the anterior pituitary, 546
 - responsiveness of substance P to
 - in the anterior pituitary, 542-43
 - see also Growth factor, Growth hormone
- Hyalinization**
 - and free radical production, 703
- Hyaluronic acid**
 - arterial cell interactions, 302
- Hybridization histochemistry**
 - and neuroendocrine peptide gene expression, 438
- Hydra**
 - vesicular swelling during exocytosis, 168
- Hydrocarbon**
 - chains
 - and modeling membrane fusion, 204
- Hydrogen**
 - and intracellular pH, 363
 - Na-H exchange
 - in epithelial cells, 380
 - see also Transepithelial H⁺ transport
- Hydrogen ion pumps**
 - electrogenicity of
 - and organelle acidification, 405-06
- Hydrogen peroxide**
 - effect of
 - on cellular components, 672
 - endothelium-dependent responses, 311
 - and formation of carbon-centered radicals, 658
 - mechanisms of production of, 669-72
 - and tolerance to hyperoxia, 712
- Hydroperoxide**
 - and antioxidant defenses in the lung, 695, 698
 - reaction with superoxide, 672-73
- Hydroperoxyl radical**
 - lifetime of, 663
- Hydrophobic acyl chains**
 - and osmotic swelling, 166
- Hydroxyl radical**
 - during hyperoxic toxicity, 714
 - and irreversible injury following ischemia, 38
 - and lethal pulmonary oxygen toxicity, 723
 - lifetime of, 662
- Hydroxyprostaglandin dehydrogenase**
 - and endothelial biogenic amines, 336
- Hyperbaric oxygen toxicity**
 - and pulmonary damage as cause of death, 704
- Hypercapnea**
 - and transepithelial H⁺ transport, 158
- Hypercholesterolemia**
 - and plasma lipoprotein levels, 128
- Hyperglycemia**
 - suppressive effect of
 - on GHRH, 579
- Hyperinsulinemia**
 - and growth hormone hypersecretion, 582
- Hyperosmotic solutions**
 - inhibition of exocytosis, 169
- Hyperosmotic stress**
 - growth factors and pH, 368
- Hyperoxia**
 - and antioxidant defenses in the lung, 698
 - increased formation
 - of reactive O₂ species in, 706
 - see also Free radicals
- Hyperplasia**
 - and free radical production, 703
 - of the pituitary
 - and neuroendocrine peptide genes, 441
- Hyperprolactinemia**
 - LH response to naloxone, 531
- Hyperthermia**
 - β -endorphin inducing, 617
- Hypertonicity**
 - and intracellular pH regulation, 368
- Hypertrophy**
 - and free radical production, 703
- Hypochlorite**
 - and antioxidant defenses in the lung, 697
- Hypochlorous acid**
 - and formation of carbon-centered radicals, 658
- Hypoglycemia**
 - and GH release, 556
 - and hypothalamic-pituitary function, 482
- Hypophysectomy**
 - and renal inositol phospholipids, 62
- Hypophysial portal circulation**
 - and secretion of CRF, 481
- Hypothalamic amenorrhea**
 - LH response to naloxone, 531
- Hypothalamic peptides**
 - and growth hormone releasing hormone, 570
- Hypothalamic temperature**
 - as a potential thermal input in thermoregulatory control, 606
- Hypothalamic-pituitary function**
 - and insulin-pituitary hypoglycemia, 482
 - see also Endogenous opioid peptides
- Hypothalamus**
 - afferent inputs to
 - and substance P, 537-38
 - factors controlling somatostatin secretion, 553-54
 - and growth hormone releasing hormone (GHRH), 569
 - localization of somatostatin in, 552-53
 - neurotensin-like immunoreactivity in, 543

- in the regulation of
 - adrenocorticotrophic hormone, 475
 - and somatostatin in the pituitary, 559
 - and temperature regulation, 600-3
- Hypothermia
 - and dopamine, 618
 - and inhibition of ACTH secretion, 482-83
 - and neurotensin, 615-16
- Hypothyroidism
 - and thyroid-stimulating hormone, 530
- Hypoxanthine
 - and capillary endothelial transport, 327
- Hypoxia
 - and endothelium-dependent responses, 316
 - see also Renal metabolism
- Hypoxic lesions
 - and role of ATP in renal functions, 15
- I
- Identification
 - of cellular activation mechanisms
 - associated with salivary secretion, 75-85
- IgE receptor
 - and secretory exocytosis, 230
- Immunoglobulin gene
 - functional lymphoid-specific enhancer within
 - and analysis of neuroendocrine genes, 441
- Immunologic properties
 - alterations in expression of
 - in pulmonary endothelium, 266
- Immunology
 - and neural grafting, 449
- Immunoneutralization
 - and temperature control, 620
- Immunoreactivity
 - neurotensin-like, 543-44
 - substance P-like
 - and anterior pituitary function, 537
- Implantation
 - methods of
 - and neural grafting, 449-50
- Impulse frequency
 - and temperature receptors response, 628
- Indicator dilution estimation
 - see Capillary endothelial transport
- Inflammation
 - and free radical production, 703
 - and pulmonary oxygen toxicity, 721
 - as stage in lethal pulmonary oxygen toxicity, 724
- Inflammatory reactions
 - in pulmonary endothelium, 266
- Inhibitory responses
 - endothelium-dependent, 307-15
- Inhibitory synaptic potentials
 - and CNS thermoreceptors, 649
- Inosine
 - and capillary endothelial transport, 327
- Inositol
 - levels
 - in disease states, 62-63
 - synthesis
 - and presence of free inositol, 67
 - transport of
 - and renal metabolism, 60-62
- Inositol biphosphate
 - lipids
 - and salivary secretion, 75, 80-82
 - and phospholipase C action, 56
- Inositol phospholipids
 - and intracellular pH regulation, 363-72
 - see also Renal inositol phospholipid metabolism
- Inositoltrisphosphate
 - thyrotropin-releasing hormone, 515
- Insect nervous systems
 - electrical activity in, 2
- Insemination
 - and fertilization potential
 - figure, 195
- INSF₃
 - and TRH stimulation of secretion, 517-18
- Insulin
 - and growth factors and pH, 366
 - as modulator of endothelial cell functions, 341
 - release
 - glucose-mediated, 157
- Insulin-induced hypoglycemia
 - and hypothalamic-pituitary function, 482
- Insulin-like growth factors
 - suppressing GH release, 579
- Integration and central processing
- in temperature regulation
 - hypothalamus, 598-99
 - midbrain, 599-600
 - motor outputs, 604-7
 - spinal cord, 596-97
 - thalamus, 598-99
 - trigeminal nucleus, 597-98
- Interferon
 - in pulmonary endothelium, 269
- Interleukin 1
 - in pulmonary endothelium, 269
- Interstitial
 - and capillary endothelial transport, 324
- Intestinal transport
 - and intracellular Ca²⁺, 138
 - see Ca²⁺/cAMP intestinal transport
- Intracellular Ca-release
 - and salivary secretion, 80-81
- Intracellular pH regulation
 - in epithelial cells
 - epithelial acid/base transport systems, 378-81
 - pH regulation in selected epithelial cells, 381-84
 - transepithelial acid transport, 384-86
 - and hormonal regulation of transport, 219
 - by vertebrate muscle
 - cardiac muscle, 353-56
 - skeletal muscle, 350-53
 - smooth muscle, 356-58
- Intracellular receptor
 - for calcium
 - mobilized in response to GnRH, 505-6
- Intracellular recordings
 - of thermosensitive neurons, 648-49
- Intracellular sialyl transferase
 - and cell adhesion molecules, 426
- Intracerebral neural implants
 - mechanisms of action of, 453-56
- Intracortical solid nigral grafts
 - in neural grafting, 455
- Intraorgan regional flows
 - and capillary endothelial transport, 323
- Intraorganelle solute storage
 - and organelle acidification, 409-10
- Intraventricular infection
 - of substance P, 539-40
- Inverted micellar intermediates (IMI)
 - modeling membrane fusion, 208

746 SUBJECT INDEX

- Ion flux
 - and vesicle membrane ion permeability, 171
- Ion permeability
 - and renal function, 15
 - and salivary activation mechanisms, 77
- Ion transport
 - affecting pH in epithelial cells
 - figure, 382
 - in brain capillary endothelial cells
 - figure, 244
 - cellular mechanisms of, 136-37
 - Na/HCO₃-Cl/H exchange, 380
- Ion-sensitive ATPase
 - and renal function, 12-14
- Iopomeanol
 - and antioxidant defenses in the lung, 696
- Ischemia
 - and relation to blood flow, 33-34
- Ischemic damage
 - protection against, 43
 - role of ATP in, 14-15
 - see also Renal metabolism
- Ischemic metabolism
 - recent methods of study, 33
- Isochronism
 - Lapique's idea of, 3
- Isopteranol
 - endothelium-dependent responses, 314
 - and salivary secretion, 76
- K**
- Ketanserin
 - and endothelium-dependent responses, 313
- Ketoglutarate
 - and ATP in renal function, 22
- Ketometabolites
 - and endothelial biogenic amines, 336
- Kidney
 - see Renal inositol phospholipid metabolism,
 - Renal metabolism
- Kinase reactions
 - and ATP in renal function, 26
- Krebs cycle
 - and anoxia, 43
- L**
- Lactate dehydrogenase
 - and osmotic forces in exocytosis, 183
- Lactic acid
 - in ischemia, 34
- Lactoferrin
 - and bactericidal oxidant production, 673
- Laminin
 - and arterial cell interactions, 295
- LDL receptor
 - functional activity in liver, 124
 - and receptor recycling, 126
- L-DOPA
 - in brain capillaries, 245
- Learning
 - and neural grafting, 451-52
- Lectins
 - and endothelial cell surface, 281
- Leukotriene C₄
 - synthesis
 - and superoxide production, 671
 - and vascular prostaglandin metabolism, 251
- Lifespan
 - and free radical biology, 664
- Ligand-receptor complex
 - and effect of CCK and bombesin, 112
- Ligands
 - pathways of endocytosis and exocytosis, 159
- Limbic function
 - role of somatostatin in, 553
- Limulus
 - vesicular swelling during exocytosis, 168
- Linear growth velocity
 - and growth hormone releasing hormone, 584
- Lingual blood flow
 - and temperature regulation, 605
- Lipid bilayer membranes
 - and fusion of phospholipid vesicles, 171
- Lipid ester hydrolases
 - and the endothelial cell surface, 282
- Lipid messengers
 - and thyrotropin-releasing hormone, 516
- Lipid peroxidation
 - and bactericidal oxidant production, 673-74
 - and free radical toxicity in the lung, 686
 - in hyperoxia, 707-9
 - and tolerance to O₂, 713
- Lipids
 - potential modulatory role of in the mechanism of GnRH action, 506-9
- Lipid segregation
 - and membrane fusion, 209
- Lipolytic enzymes
 - and the endothelial cell surface, 282
- Lipoprotein catabolism
 - in hepatocytes
 - and receptor recycling, 125
- Lipoproteins
 - cellular sites of hepatic uptake, 123
 - and the endothelial cell surface, 284
- Liposomes
 - and electrical regulation of sperm-egg fusion, 192
- Lipoxygenase
 - endothelium-dependent responses, 310
 - and renal ischemia, 37
- Lithium
 - and muscle pH regulation, 354
- Liver
 - see Hepatic lipoprotein receptors
- Low density lipoproteins
 - liver as site of terminal catabolism, 119
- Luminal membrane
 - endocytic removal of H⁺ pumps from, 156
 - and hormonal regulation of transport, 217
- Luminal transport systems
 - dependency of ATP, 26
- Lung injury
 - lethal and sublethal exposure to hyperoxia
 - figure, 722
 - see Free radicals
- Luteinizing hormone
 - and gonadotropin releasing hormone, 495
 - and intraventricular injection of neurotensin, 545
 - and thyrotropin
 - injection of substance P, 540
- Lymphocyte recognition
 - and endothelial cell surface, 285
- Lymphocytes
 - growth factors and pH, 368
- Lysis
 - MgATP, Cl⁻ dependent relationship to exocytosis, 180
- Lysophosphatidylinositol
 - and thyrotropin-releasing hormone, 516
- Lysosomal protein degradation

- and organelle acidification, 409-11
- Lysosomes
 - and hypoxia, 38
 - and organelle acidification, 404
- Lysyl residue
 - methylation of
 - in liver, 122
- M**
- Macaca mulatta*
 - and pulmonary oxygen toxicity, 726
- α_2 -Macroglobulin
 - and the endothelial cell surface, 286
- Macromolecular structures
 - and inhibition of exocytosis, 170
- Macrophages
 - producing superoxide, 669
- Magnesium
 - and ATP in renal function, 25
 - and renal cell function, 13
- Malnutrition
 - and GH hypersecretion, 580
- Malondialdehyde content
 - and hyperoxia, 708
- Maltodextrin fraction
 - potassium glutamate, 184
- Manitol
 - as protection against ischemic injury, 43
- Marker proteins
 - and gonadotropin releasing hormone, 498
- Mechanoreceptor activity
 - and temperature, 629
- Median eminence
 - and substance P, 538
- α -Melanotropin
 - as antipyretic
 - in temperature control, 614
- Melittin
 - endothelium-dependent responses, 309
- Membrane coalescence
 - and focused destabilization, 207-8
 - as stage of membrane fusion, 202
- Membrane fusion
 - cellular signals for, 157
 - and exocytosis, 227-28
 - model systems and mechanisms of, 234-35
 - between sperm and egg, 191-93
 - see also Hormonal regulation of epithelial transport,
- Regulation of membrane fusion
- Membrane lipids
 - see Renal inositol phospholipid metabolism
- Membrane permeability
 - to potassium, 24
- Membrane potential changes
 - and bactericidal oxidant production, 670
- Membrane transport
 - see Intracellular pH regulation
- Membrane vesicles
 - and pH regulation in epithelial cells, 377
- Memory
 - and neural grafting, 452
- Menstrual cycle
 - and growth hormone releasing hormone, 578-79
- Menthol
 - and activity of cold receptors, 633
- Mesangial cells
 - studies of phosphoinositide metabolism in, 63-65
- Metabolic activity of pulmonary endothelium
 - modulations of structure/function
 - functional properties of pulmonary endothelium, 264-73
- Metabolic endocrine release
 - and the PO/AH
 - in mammals, 640
- Metabolic hypoxia
 - versus bioenergetic hypoxia, 37-41
- Metabolic inhibition
 - and ATP in renal function, 26
- Metabolism
 - and inositol phospholipid, 51
 - and temperature regulation, 606
 - of vasoactive biogenic amines, 338-40
- Metabolites
 - and capillary endothelial transport, 323, 327
 - and free radical toxicity, 681
- Metalloendoprotease
 - and secretory exocytosis, 234
- Met-enkephalin
 - and posterior pituitary function, 531
 - and release of neurotensin from anterior pituitary, 546
- Methacholine
 - and salivary secretion, 76
- Methemoglobin
 - endothelium-dependent responses, 311
- Methionine
 - and receptors regulating acid secretion, 92
- Methylamine
 - and organelle acidification, 404
- MgATP
 - and osmotic forces in exocytosis, 180
- Microaggregation
 - and gonadotropin releasing hormone receptors, 501
- Microcirculation
 - and capillary endothelial transport, 326
- Microdomains
 - charge-differentiation
 - endothelial surface, 285-86
- Microtubule-associated proteins (MAPs)
 - and exocytosis, 226
- Microvascular occlusion
 - and the pulmonary endothelium, 273
- Midbrain
 - and temperature regulation, 599
- Mitochondria
 - and cutaneous temperature, 630
 - interrelationship with Na, K-ATPase, 10
- Mitochondrial energy production
 - in the kidney, 17
- Mitochondrial function
 - and cellular oxygen supply, 41-43
 - regulation of
 - pathological consequences of ischemia, 42-43
- Mitochondrial membrane
 - and intracellular pH regulation, 350
- Mitochondrial respiratory reserve
 - and ATP in renal function, 19
- Mitogenic peptides
 - and growth factors and pH, 366
- Mitogens
 - and arterial cell interactions, 298
 - modifying intracellular pH sensitivity
 - figure, 369
- Mitosis
 - and arterial cell interactions, 300
- Mitotic initiation
 - and pH-mediated cell regulation, 392
- Mobility
 - of the GnRH receptor, 499-500

- Modeling membrane fusion
mimicry and mechanism in
phospholipid models
focused destabilization,
207-9
methods of investigating,
202-3
stable membrane apposi-
tion, 203-4
stages of membrane fusion,
201-2
trigger and contact, 204-
7
- Molecular oxygen sensors
and the metabolic response to
hypoxia, 39-41
- Monoamine oxidase
in brain capillaries, 245
catalytic action of, 337
- Monoamine oxidase inhibitor
and neuronal receptors, 467
- Monoclonal antibodies
and pulmonary endothelium,
272
- Monooester phosphates
and salivary activation mech-
anisms, 79
- Monoglycerides
in chylomicrons, 120
- Monomers
and cell adhesion molecules,
423
- Monosaccharide
endothelial cell surface, 281
- Monosodium glutamate
and GH secretion, 572
- Morphine
and neuronal receptors, 462
- Morphogenesis
and cell adhesion molecules,
426-27
- Morphometric analysis
and ATP in renal function,
18
- Motor coordination
and neural grafting, 451-52
- Motor outputs
and CNS control of body tem-
perature, 604-7
- Mucus secretion
cholinergic receptors
in acid secretion, 94
- Multiple indicator dilution tech-
nique
and capillary endothelial trans-
port, 322
- Multivesicular bodies
and lipoprotein catabolism,
125
- Muscarinic agonists
cell calcium
in transepithelial H^+ trans-
port, 153
- Muscarinic cholinergic agents
and secretagogue receptors,
109
- Muscarinic-cholinergic stimuli
and salivary activation mech-
anisms, 81
- Muscarinic receptors
and endothelium-dependent re-
sponses, 308
- Muscle tone
and pH regulation, 358
- Myeloperoxidase
and bactericidal oxidant pro-
duction, 674
- Myoblast fusion
and membrane fusion, 209
- Myointimal proliferation
after endothelial denudation
factors suppressing, 297
- N
- N-allylnormetazocine
as psychotomimetic opiate,
465
- Na-dependent acetate uptake
in mammalian proximal
tubules, 383
- Na/H exchange
activating growth factors, 364
and brain capillary endothe-
lium, 243
mechanism of activation of,
368-71
- Na/HCO₃ cotransport
electrogenic
in epithelial cells, 379
- Naloxone
and release of prolactin, 528-
29
- Naphthalenesulfonamides
and NaCl absorption, 142
- Na pump
in cardiac muscle
pH regulation, 353
- Narcotic analgesics
and temperature control, 616
- N-CAM binding
trans-homophilic
and cell adhesion mole-
cules, 422-23
- N-chloroamines
and antioxidant defenses in the
lung, 697
- N-cyclopropyl
and neuronal receptors, 462
- Necturus
and pH in epithelial cells, 383
- Nelson's disease
and neuroendocrine role of
CRF, 479
- β -Neoeendorphin
and opioid peptides, 528
- Neoplasia
connection with embryonic
states
and cell adhesion mole-
cules, 428
- Nephron
comparison of parameters
ATP and renal function,
11
- Neural behavior
and electrophysiological tech-
niques, 2
- Neural grafting in the aged rat
brain
grafting to the aged brain,
450-53
graft procedures, 448-50
intracerebral neural implants,
453-56
- Neural histogenesis
see Cell adhesion molecules
- Neuroblastoma
and growth factors and pH,
365
- Neurocrine pathway
and regulation of acid secre-
tion, 89
- Neurodegenerative diseases
see Neural grafting in the aged
rat brain
- Neuroendocrine peptides
see Genes encoding mamma-
lian neuroendocrine pep-
tides
- Neuroendocrine regulation
role of opioids in, 527
- Neurohumoral substances
and Ca^{2+} /cAMP intestinal
transport, 141
- Neuroleptic haloperidol
at binding sites
see Neuronal receptors
- Neuronal functional specificity
synaptic organization
of preoptic thermosensitive
neurons, 645
- Neuronal receptors
benzodiazepine receptors, 463-
64
calcium antagonist receptors,
465-66
conventional neurotransmitter
receptors, 466-67
opiate receptors, 461-63
PCP receptors, 464-65
receptor-like binding sites,
467-68
sigma receptors, 465
- Neuronal thermosensitivity
electrophysiological studies,
642-44
influence of afferent input on,
647

- Neurons
 - tested for local thermosensitivity figure, 643
- Neurotensin
 - and intestinal transport, 141
 - and temperature control, 615-16
- Neurotransmitter effects
 - and control of CRF secretion, 486-87
- Neurotransmitters
 - in brain capillaries, 245
 - in exocytosis, 225
 - see also Genes encoding mammalian neuroendocrine peptides
- Neurotransmitters in temperature control
 - antipyretic peptides, 613-15
 - arachidonic acid derivatives, 618-20
 - dopamine, 618
 - other peptides, 615-18
- Neutropenia
 - and pulmonary oxygen toxicity, 724
- Neutrophil collagenase
 - and bactericidal oxidant production, 674
- Neutrophils
 - depletion of
 - and toxic effects of exposure to hyperoxia, 724
 - producing superoxide, 669
- NH₂ terminal binding
 - and cell adhesion molecules figure, 419
- Nicotinic acetylcholine receptor
 - as neurotransmitter receptor, 461
- Nicotinic acid
 - and hepatic LDL receptors, 130
 - and tissue resistance to ischemic injury, 45
- Nigrostriatal dopamine system
 - and Parkinson's disease, 447
- Nitric oxide
 - in smoggy air, 661
- Nitrofurantoin
 - and acute lung injury, 683
 - and free radical formation in the lung, 682
- Nitrogen dioxide
 - and free radical formation in the lung, 682
 - in polluted air, 657
- Nociceptive trigeminal inputs
 - and temperature regulation, 597
- Nonoxidative ATP production
 - and ischemia, 22
- Nordihydroguaiaretic acid
 - and endothelium-dependent responses, 310
- Norepinephrine
 - and endothelial biogenic amines, 336
 - endothelium-dependent responses, 307, 314
 - and interaction of CRF, 477-78
 - and neuronal receptors, 463
 - and renal inositol phospholipids, 58
 - and somatostatin in anterior pituitary function, 554
- Normoxia
 - see Renal metabolism
- Nuclear chromatin clumping
 - and pulmonary oxygen toxicity, 726
- Nuclear magnetic resonance
 - and osmotic forces in exocytosis, 176
- Nucleic acids
 - involvement with radicals, 664
- Nucleotide permeability
 - and ATP in renal function, 16
- Nucleotide specificity
 - and organelle acidification, 407
- Nucleus basalis
 - lesions of
 - as a model of Alzheimer's disease, 447
- Nystatin
 - and ATP in renal function, 20
- O
- ODC induction
 - calcium channel blockers on
 - and endothelial biogenic amines, 340
- Oligomycin
 - and organelle acidification, 406
 - and salivary activation mechanisms, 81
- Oligonucleotide probes
 - and identification of recombinant clones
 - encoding peptide precursors, 436
- Oncogenes
 - and neuroendocrine peptide genes, 437
- Opiate addiction
 - and hypogonadism, 530
- Opioid peptides
 - and neuroendocrine peptide genes, 434
 - and release of neurotensin from anterior pituitary, 546
 - and temperature control, 616
 - see also Endogenous opioid peptides
- Opioid peptide enkephalins
 - and neuronal receptors, 462
- Opioidergic neurones
 - and hypothalamic-pituitary function, 528
- Optic tectum
 - and cell adhesion molecules, 421
- Organelle acidity
 - techniques of measuring, 403-4
- Organic-anion transport systems
 - and cotransport Na⁺, 381
- Oryzias
 - and fertilization potential, 193
- Osmolality
 - analysis of chromaffin granules, 179
 - and nicotinic agonist-induced secretion figure, 182
- Osmotic destabilization
 - modeling membrane fusion, 206
- Osmotic forces in exocytosis
 - from adrenal chromaffin cells
 - chromaffin cells with leaky plasma membranes, 183-86
 - contents of chromaffin granules, 175-76
 - lysis of granules, 179-81
 - osmotic properties of chromaffin granules, 176-79
 - secretion from intact chromaffin cells, 181-82
- Osmotic gradient
 - and hormonal regulation of transport, 218-19
 - and vesicle swelling, 166
- Osmotic swelling
 - schematic of figure, 165
- Osmotic swelling of vesicles
 - fusion of phospholipid vesicles, 164-67
 - osmotic forces in exocytosis, 167-71
- O₂ toxicity
 - lipid peroxidation
 - protection against, 713
- Ouabain
 - and brain capillary endothelium, 242
 - and organelle acidification, 406

- Ovum maturation
and gonadotropin releasing hormone (GnRH), 495
- Oxidant production
see Bactericidal oxidant production
- Oxidative injury
in anoxia, 44
- Oxidative mechanisms
and endothelium-dependent responses, 310-11
- Oxidative metabolism
and utilization of ATP by the renal cell, 10
- Oxidative phosphorylation
and kidney transport, 24
- Oxidized glutathione
in hyperoxia, 708
- Oxygen
consumption
and receptors regulating acid secretion, 91
and renal cell function, 9
deficiency
metabolic responses of cells to, 33
free radicals
and lethal pulmonary oxygen toxicity, 723
radical formation
recorded in hyperoxia, 706
singlet
in hyperoxia, 715
toxicity
superdioxide dismutase as protection against, 711
see also Free radicals
Pulmonary oxygen toxicity
- Oxygenases
dependence
and hypoxia, 39
- Oxy-radicals and their reactions
lifetimes of free radicals, 661-63
radical formation, 659-61
radical reactions, 663-64
- Oxytocin
and interaction with CRF, 480
and posterior pituitary function, 531
potentiating the effect of CRF, 477-78
- Ozone
and free radical formation in the lung, 682
as a nonradical, 661
and oxy-radicals and their reactions, 657
and the production of oxy-radicals, 659
- P
- Pacinian corpuscle
as cutaneous thermoreceptors, 629
- Pancreas
and phosphoinositides, 78
- Pancreatic enzyme secretion
see Receptors and cell activation
- Pancreatic islet cell tumors
and abnormal production of factors
with growth hormone-releasing activity, 569
- Paracrine cells
on gastrin receptors
and acid secretion, 94
- Paracrine pathways
and receptors regulating acid secretion, 90
- Paramecium tetraurelia*
exocytosis in, 226
- Paraquat
and free radical formation in the lung, 682
mechanism of toxicity, 685-87
poisoning
and lung damage, 682
- Parathyroid cells
secretagogue-induced hormone release from, 181
- Parathyroid hormone
renal effects of, 58
- Parenchymal cells
and capillary endothelial transport, 324
- Parietal cell receptor specificity
for histamine, cholinergic agents and gastrin, 91
- Parietal cells
and acid secretion, 91
- Parkinson's disease
see Neural grafting in the aged rat brain
- Parotid acinar cells
and salivary secretion, 80
- Penfluridol
and calmodulin
and mechanism of action of GnRH, 506
- Pentagastrin
and receptors regulating acid secretion, 95
- Pentosephosphate cycle
and renal inositol phospholipids, 61
- Pepsinogen
and cholinergic receptors
in acid secretion, 94
- Peptide precursors
structural features of neuroendocrine, 432-34
- Peptide receptors
and neuroendocrine peptide genes, 443
- Peptide-protease inhibitors
and superoxide production, 671
- Peptidergic transmitter
and endothelium-dependent responses, 315
- Peptides
and growth hormone releasing hormone, 570
and intrinsic hypothalamic neuronal elements, 543
and secretagogue receptors, 104, 111
thermal effects of, 615-18
see also Endogenous opioid peptides
Genes encoding mammalian neuroendocrine peptides
Growth hormone releasing hormone
Somatostatin
Vasovascular intestinal peptide
- Peripheral vascular obstruction
and stagnant hypoxia, 33
- Permeability
and endothelial biogenic amines, 342
- Peroxidases
in arterial cell interactions, 296
and incidence of radical ions, 659
- PGH synthase
in smooth muscle cells, 255-56
- PGI₂ synthesis
by smooth muscle and endothelium, 255
- pH
stimuli that raise figure, 367
- pH-mediated cell regulation
mechanisms and consequences of
pH dependences of intracellular processes, 390-98
see also Growth factors, Intracellular pH regulation
- Phagocytes
see Bactericidal oxidant production
- Phagocytosis
and bactericidal oxidant production, 670
and endothelial cell activation, 272
pulmonary endothelial cells after

- figure, 267
- Pharmacokinetics**
of growth hormone releasing hormone, 575
- Phencyclidine receptors**
and neuronal receptors, 464-65
- Phenidone**
and endothelium-dependent responses, 310
- Phenotypic modulation**
of smooth muscle in culture, 297-98
- Phenylethylamine**
and endothelial biogenic amines, 337, 339
- Pheochromocytoma cells**
secretagogue-induced hormone release from, 181
- Phorbol esters**
and hormonal regulation of transport, 219
and intracellular pH regulation, 368-71
in salivary gland, 84
and secretory exocytosis, 232
and TRH stimulation of secretion, 521
- Phorbol myristate acetate**
and bactericidal oxidant production, 670
- Phosphatases**
secretory exocytosis, 231-33
- Phosphate**
and anoxia, 43
removal from polyphosphoinositides
figure, 52
- Phosphatidic acid**
and renal inositol phospholipids, 53
- Phosphatidylcholine**
and effect of LHRH, 574
in vascular prostaglandin metabolism, 252
metabolism
and renal ischemia, 36
- Phosphatidylinositides**
and lipids in mechanism of GnRH action, 506
- Phosphatidylinositol**
and calcium as an intracellular messenger, 229
and electrolyte transport, 143
and lipid segregation, 209
and secretagogue receptors, 103
turnover
modeling membrane fusion, 210
- Phosphatidyl serine**
and organelle acidification, 408
- Phosphodiesterase**
and pituitary regulation by somatostatin, 562
and renal inositol phospholipids, 53
- Phosphoglycerides**
and vascular prostaglandin metabolism, 257
- Phosphoinositide effect**
pathways of
and salivary activation mechanisms, 79
- Phosphoinositide pathway**
in transepithelial H^+ transport, 153
- Phosphoinositide turnover**
and renal inositol phospholipids, 64
- Phosphoinositides**
and membrane fusion, 157
and model of TRH action, 522-23
and renal ischemia, 36
and the salivary glands, 78
and stimulus-secretion coupling, 228
- Phospholipase**
calcium-dependent activation of
and hypoxia, 41
inhibition
in phospholipidosis, 65
- Phospholipase A_2**
degradation of cardiolipin
and irreversible renal ischemia, 36
and endothelium-dependent responses, 309
and temperature control, 618-19
in vascular prostaglandin metabolism, 252
- Phospholipase C**
growth factors and pH, 372
products of action of
figure, 54
thyrotropin-releasing hormone, 515, 516
- Phospholipids**
bilayer membranes
and osmotic swelling, 163
as membrane markers, 164
metabolism
and effect of GHRH action, 574
model systems
and membrane fusion, 201
protein-free systems
modeling membrane fusion, 207
vesicles
fusion of with planar bilayer membranes, 164-67
and secretory exocytosis, 234
- Phosphomonoesterase**
and salivary activation mechanisms, 83
- Phosphorylation**
and organelle acidification, 408
- Physalaemin**
and secretagogue receptors, 106, 111
- Physostigmine**
and neural grafting, 454
- Piloerection**
and the PO/AH
in mammals, 640
- Pituitary adenomas**
and neuroendocrine role of CRF, 479
binding sites
and gonadotropin releasing hormone (GnRH), 496
gland
actions of somatostatin on the, 560
gonadotropins
and gonadotropin releasing hormone (GnRH), 495
hormone
see Thyrotropin-releasing hormone stimulation
lesions
and growth hormone releasing hormone, 583
somatotrophs
and growth hormone releasing hormone, 573
see also Endogenous opioid peptides
Posterior pituitary
Somatostatin
Substance P, and
neurotensin
- Planar lipid bilayer**
and secretory exocytosis, 234
- Planar phospholipid bilayer membranes**
see Osmotic swelling of vesicles
- Plasma**
and capillary endothelial transport, 324
Plasma angiotensinogen and hypoxia, 41
Plasma lipids
monitoring of
and endothelial cell surface, 288-89
Plasma lipoproteins
role in catabolism, 120
Plasma membrane
 Ca^{2+} entry
and NaCl absorption, 140

- and CCK binding sites, 107
- fusion of intracellular vesicles with
 - and osmotic swelling, 163
 - and inhibition of exocytosis by hyperosmotic solutions, 170
- ion transport processes
 - Ca²⁺ effects on, 139
 - cAMP effects on, 144
- proton pump
 - and pH-mediated cell regulation, 395
- receptors
 - and inositol phospholipid metabolism, 51
- transport
 - and anoxia, 44
 - vesicle permeability and salivary secretion, 82
- Plasma proteins
 - cell surface-associated, 286
- Plasminogen inhibitor and the endothelial cell surface, 289
- Platelet activating factor and secretory exocytosis, 232
- Platelet adenylate cyclase and vascular prostaglandin metabolism, 253
- Platelet adhesion
 - in pulmonary endothelium, 270
- Platelet-derived growth factor and intracellular pH regulation, 363-72
- Platelets
 - secretagogue-induced hormone release from, 181
- Polar solutes
 - and brain capillary endothelium, 242
- Polarity modulation
 - and cell adhesion molecules, 422
- Polyamine oxidase and endothelial biogenic amines, 337-8
- and paraquat uptake, 684
- Polyene antibiotics
 - and renal function, 15
- Polyethylene glycol
 - as protection against ischemic injury, 43
- Poly-nuclear aromatic hydrocarbons
 - and formation of carbon-centered radicals, 658
- Polypeptide
 - and arterial cell interactions, 299
 - chains
 - and cell adhesion molecules, 418
 - hormones
 - see Growth factor
- Polyperoxides
 - and bactericidal oxidant production, 675
- Polyphosphoinositides
 - measurement techniques, 57
- Polyspermy
 - fertilization potentials and electrical blocks to, 193-95
- Polyunsaturated fatty acids
 - and antioxidant defenses in the lung, 695
 - and bactericidal oxidant production, 674
 - and carbon-centered radicals, 658
- Posterior pituitary and opioid peptides, 531-32
- Potassium
 - and ATP in renal function, 23
 - and brain capillary endothelium, 242
 - channels in synaptosomes
 - blockade by PCP of, 465
 - and hormonal regulation of transport, 217
 - and renal cell function, 10
 - role in thermoreceptor response, 632
 - and somatostatin secretion from the hypothalamus, 553
 - and TRH stimulation of secretion, 519
 - see also Ca²⁺/cAMP intestinal transport
- Potassium glutamate
 - osmotic forces in exocytosis, 184
- Potassium salts
 - chromaffin granules
 - osmotic forces in exocytosis, 177
- Potassium transport
 - Ca²⁺ regulation of, 140
- Preoptic area and anterior hypothalamus
 - and temperature receptors, 639-42
- Preoptic thermosensitive neurons
 - synaptic organization of, 645-49
- Pre-prodynorphin and neuroendocrine peptide genes, 433-34
- Pre-proenkephalin
 - and neuroendocrine peptide genes, 433-34
- Prodynorphin
 - and opioid peptides, 528, 531
- Proglumide
 - and receptors regulating acid secretion, 93
- Prolactin
 - and injection of neurotensin, 544
 - and injection of substance P, 540
 - and opioid peptides, 528
 - secretion
 - thyrotropin-releasing hormone, 515-16
 - and TRH and Ca interaction, 518
- Pronase
 - and receptors regulating acid secretion, 90
- Proopiomelanocortin and neuroendocrine peptide genes, 433-34
- stimulating the release of, 476
- Proopiomelanocortin mRNA and hybridization histochemistry, 439
- Prostacyclin
 - asymmetric release of from endothelia, 257
 - and endothelial biogenic amines, 336
 - and the endothelial cell surface, 289
 - by endothelium-dependent responses, 307
 - synthesis
 - implications of multiple subcellular sites, 256-57
 - subcellular location of, 255-57
- Prostaglandins
 - biosynthesis
 - and hormonal regulation of transport, 218-19
 - as markers of renal cell injury, 36
 - see also Vascular prostaglandin metabolism
 - formation
 - enzymic pathways, figure, 252
 - metabolism
 - and eicosanoid biochemistry, 251-53
 - and neurochemical control of body temperature, 619
 - production
 - and renal phosphoinositide metabolism, 66

- and superoxide production, 671
 - synthetase
 - and antioxidant defenses in the lung, 696
 - Prostanoids
 - and endothelium-dependent responses, 316
 - and hypoxia, 41
 - synthesized by cells of the vasculature
 - figure, 254
 - in vascular prostaglandin metabolism, 252
 - Proteases
 - and arterial cell interactions, 300
 - Protein
 - blotting
 - and neuroendocrine peptide genes, 437
 - degradation
 - and organelle acidification, 403
 - enhancer-binder
 - and neuroendocrine peptide genes, 439
 - glycosylation of
 - and organelle acidification, 405
 - and hormonal regulation of epithelial transport, 213
 - insertion
 - and sperm-egg fusion, 197
 - involvement with free radicals, 664
 - kinase
 - and bactericidal oxidant production, 670
 - and salivary secretion, 76
 - secretory exocytosis, 231-33
 - kinase C
 - DG activation of, 522
 - and electrolyte transport, 143
 - and hormonal regulation of transport, 218-19
 - and lipids in mechanism of GnRH action, 506
 - and renal inositol phospholipids, 56
 - role of in intracellular pH regulation, 370-71
 - and TRH stimulation of secretion, 521
 - and osmotic forces in exocytosis, 167
 - phosphorylation
 - in salivary gland, 84
 - and TRH stimulation of secretion, 519-20
 - synthesis
 - and pH dependences of intracellular processes, 390-98
 - and secretagogue receptors, 109
 - see also Channel proteins
 - Marker proteins
 - Proteoglycans
 - and alterations in expression, 264
 - and the endothelial cell surface, 280
 - Proton ATPases
 - and endocytic removal of H⁺ pumps, 156
 - Proton pump
 - and acid secretion in epithelia, 380
 - see also Plasma membrane, proton pump
 - Proximal tubules
 - amphibian
 - and pH regulation in epithelial cells, 381-84
 - Pdlns breakdown
 - and renal inositol phospholipids, 58
 - Pulmonary damage
 - and radical-mediated reactions, 661
 - Pulmonary edema
 - and free radical production, 703
 - Pulmonary endothelium
 - functional properties of, 264-73
 - see also Metabolic activity of pulmonary endothelium
 - Pulmonary fibrosis
 - as side effect of bleomycin therapy, 683
 - Pulmonary oxygen toxicity
 - morphologic changes
 - pulmonary oxygen toxicity, 722-30
 - Pump inhibition
 - role of
 - in thermoreceptor response, 632
 - Putrescine
 - and endothelial biogenic amines, 338
 - Pyridine nucleotide oxidases
 - responsible for respiratory burst, 671
 - Pyridine nucleotides
 - fluorescence of
 - and hypoxia, 42
 - in ischemia, 34
 - Pyrogen
 - and temperature control, 618-19
 - Pyruvate
 - and anoxia, 43
 - Pyruvate carboxylase
 - and pH dependences of intracellular processes, 390-98
 - Pyruvate kinase
 - and gonadotropin releasing hormone, 498
- ## Q
- Quinacrine
 - and endothelium-dependent responses, 309
 - and organelle acidification, 404
- ## R
- Rate sensitivity
 - and thermoregulatory responses, 606
 - Reactive oxygen species
 - importance of
 - in oxygen toxicity, 709-16
 - Receptor activation
 - in salivary activation mechanisms,
 - Receptor binding techniques
 - and neuronal receptors, 461
 - Receptor-ligand interaction
 - and growth hormone releasing hormone, 571
 - Receptor mediation
 - and endothelial biogenic amines, 340-41
 - Receptor-receptor interactions
 - and gonadotropin releasing hormone, 500-2
 - Receptor signalling mechanisms
 - and salivary secretion, 75
 - Receptors
 - and bactericidal oxidant production, 670
 - and the endothelial cell surface, 283
 - and gonadotropin releasing hormone
 - structure of, 497-98
 - Receptors and cell activation
 - associated with pancreatic enzyme secretion
 - cellular cyclic AMP, 113-15
 - receptors for secretagogues, 104-13
 - Receptors regulating acid secretion
 - β -adrenergic receptors, 97
 - assays of cell function, 91
 - canine fundic mucosal cells, 94-95
 - chemotransmitters, 96

754 SUBJECT INDEX

- dispersion and identification, 90
- epidermal growth factor, 97
- histamine release from, 95-96
- parietal cell receptor specificity, 91-93
- secretagogues, 93
- somatostatin, 96
- Redox cycle
 - and oxy-radicals, 660
- Reductase inhibitor
 - altering LDL levels, 128
 - and hepatic LDL receptors, 130
- Regulation of membrane fusion
 - in secretory exocytosis
 - effector mechanisms, 230-34
 - model systems/mechanisms of membrane fusion, 234-35
 - morphology of exocytosis, 226-28
 - stimulus secretion coupling, 228-30
- Regulators
 - see pH-mediated cell regulation
- Regulatory events
 - and cell adhesion molecules, 424-27
- Regulatory functions
 - see ATP and renal cell function
- Regulatory systems
 - interactions between
 - neuronal basis for, 646
- Relaxing factor
 - and endothelium-dependent responses, 308, 312
- Renal inositol phospholipid metabolism
 - in the kidney
 - renal phosphoinositide metabolism, 56-66
- Renal metabolism
 - during normoxia, hypoxia, and ischemic injury
 - cellular oxygen supply, 41-43
 - metabolic hypoxia, 37-41
 - protection against ischemic injury, 43-45
- Renal oxidases
 - and hypoxia
 - figure, 40
- Renal sodium pump
 - and renal cell function, 9
- Reptiles
 - CNS thermoreceptors, 641-42
- Resin
 - and hepatic LDL receptors, 130
- Resistance adaptations
 - and sequential alterations, 4
- Respiration
 - in ischemia, 34
- Respiratory burst
 - see Bactericidal oxidant production
- Respiratory tract
 - see Pulmonary oxygen toxicity
- Respiratory volume
 - and free radical toxicity, 681
- Restabilization
 - as stage of membrane fusion, 202
- Retinyl esters
 - of chylomicrons
 - in the liver, 123
- Retroviral infection
 - and neuroendocrine peptide genes, 439-40
- Reversibility
 - and organelle acidification, 407-08
- Rhythmic electrical activity
 - and the nervous system, 2
- Rimorphin
 - and opioid peptides, 528
- RNA hybridization techniques
 - and neuroendocrine peptide gene expression, 438
- RNA transcripts
 - and neuroendocrine peptide genes, 441
- S
- Salivary activation mechanisms
 - calcium pathway, 77-85
 - cyclic AMP pathway, 76-77
- Saponin
 - and osmotic forces in exocytosis, 183
- Saturation kinetics
 - and selective organ damage by paraquat, 684
- Saxitoxin
 - potential-dependent binding of sperm-egg fusion, 197
- Scavenger receptor
 - functional activity in liver, 124
- Schizophrenia
 - and diphenylbutylpiperidine neuroleptics, 466
- Scrotal heating
 - response of thalamic neurons and temperature regulation, 599
- Scrotal thermal inputs
 - integration of
 - in temperature regulation, 602
- Secretagogues
 - and interaction of CRF, 477-78
 - and osmotic swelling, 170
- potentiating interactions between, 93
- receptors
 - see Receptors and cell activation
- Secretin
 - and homology with growth releasing hormone, 572
 - receptors for
 - in pancreas, 113
- Secretion
 - from chromaffin cells
 - effects of osmolality on, 183-86
 - in the fundic mucosa, 89-101
 - and intestinal electrolyte transport, 135
 - and pH-mediated cell regulation, 392
 - sites for chlorine secretion, 137
 - see also Thyrotropin-releasing hormone stimulation
- Secretion granule
 - processing of, 411
- Secretory exocytosis
 - see Regulation of membrane fusion
- Secretory organelles
 - positioning of
 - at the plasma membrane, 227
- Sensory perception
 - neural basis, 626
- Sequential alterations
 - and resistance adaptations, 4
- Serotonin
 - and endothelial biogenic amines, 337
 - and endothelial cell metabolism, 335
 - endothelium-dependent responses, 307, 313, 316
 - and intestinal transport, 141
 - and somatostatin in anterior pituitary function, 554
 - subtypes of receptors
 - differentiated by binding techniques, 466
- Serum cholesterol levels
 - and plasma lipoprotein levels, 127
- Serum mitogens
 - and arterial cell interactions, 298
- Sex steroids
 - altering GH secretion, 578
- Sialidase
 - and cell adhesion molecules, 426
- Sialoglycoconjugates
 - of endothelial cell surface, 281

- Sigma receptors
and psychotomimetic effects, 465
- Signal transduction
and thyrotropin-releasing hormone, 516
- Silica-containing dust
and free radical formation in the lung, 682
- Simple hypoxia
and relation to blood flow, 33-34
- Singlet oxygen
see Oxygen
- Sinusoidal endothelium
and hepatic uptake of lipoproteins, 123
- Skeletal muscle
and intracellular pH regulation, 350-53
- Skin sensory surfaces
see Cutaneous temperature receptors
- Smoking
and free radical toxicity, 681
- Smooth muscle
and pH regulation, 356-58
- Sodium
and brief renal ischemia, 37
and intracellular pH, 363
renal sodium pump, 9
role in thermoreceptor response, 632
see also Ca^{2+} /cAMP intestinal transport
Na-dependent acetate uptake
Na/HCO cotransport
Organic-anion transport systems
- Sodium channels
amiloride-inhibitable
in the apical membrane, 216
- Sodium periodate
of endothelial cell surface, 281
- Sodium pump
and hormonal regulation of transport, 217
- Sodium transport
and utilization of ATP by the renal cell, 10
- Solute permeability response
and hormonal regulation of transport, 215
- Solute storage
and organelle acidification, 403
- Somatocrinin
and growth hormone releasing hormone, 570
- Somatomedin C
and growth hormone releasing hormone
in children with GH deficiency, 584
- Somatomedins
altering GH secretion, 578
- Somatosensory cortex
and cutaneous thermoreceptors, 631
- Somatostatin
and activation of the pituitary-adrenal axis, 484
and effect on ACTH secretion, 478
and GHRH receptor occupancy, 582
receptors for
and acid secretion, 96
mediation of adenohypophyseal secretion
actions of somatostatin on pituitary gland, 560-63
factors controlling, 553-54
localization in the hypothalamus, 552-53
molecular heterogeneity of, 552
role in anterior pituitary regulation, 554-60
secretion
and growth hormone releasing hormone, 576
- Sorting
of permeant molecules
endothelial cell surface, 287
- Sperm-egg fusion
electrical regulation of fertilization potentials, 193-95
mechanism of voltage-dependence, 196-98
membrane fusion, 191-93
- Spinal cord
and CNS temperature regulation, 596-97
- Spinal motoneurons
and postsynaptic responses to excitatory input, 650
- Stable membrane apposition
as stage of membrane fusion, 203-4
- Stachyose
osmotic forces in exocytosis, 184
- Stagnant hypoxia
and relation to blood flow, 33-34
- Steady-state tracer bolus technique
and capillary endothelial transport, 329-30
- Steroid hormone metabolism
and hypoxia, 39
- Steroid hormones
and inositol phospholipid metabolism, 51
- Steroidogenesis
in the gonads
and gonadotropin releasing hormone (GnRH), 495
- Sterols
and osmotic forces in exocytosis, 167
- Stimulus permeability coupling
and salivary activation mechanisms, 77, 85
- Stimulus-secretion coupling
and exocytosis, 228-30
- Stoichiometry
and organelle acidification, 407-8
- Stop-flow perfusion
pH in epithelial cells, 381
- Streptozotocin
and renal inositol phospholipids, 67
- Stress
and somatostatin, 556
and temperature control, 617
- Stress fibers
epinephrine promoting, 336
- Strongylocentrotus purpuratus*
fertilization potential
figure, 194
- Substance P
and endothelium-dependent responses, 315
and intestinal transport, 141
- Substance P
regulation of anterior pituitary function
administration of substance P, 539-42
hormonal manipulations, 542-43
and neurotensin, 543-47
substance P-like immunoreactivity, 537-39
- Succinate
and ATP in renal function, 22
- Sucrose
and chromaffin granules, 176
modeling membrane fusion, 207
- Sulfhydryl compounds
and hyperoxia, 714
- Superoxide
effect of
on cellular components, 672
formation
in hyperoxia, 706
mechanisms of production of, 669-72
and the production of oxyradicals, 659

- and role in the toxicology of hyperoxia, 704
- and tolerance to hyperoxia, 710-11
- Superoxide dismutase activity in hyperoxia, 705
- and antioxidant defenses in the lung, 694
- endothelium-dependent responses, 311
- and protection from ischemic injury, 44
- Surface receptors and organelle acidification, 403
- Sweat glands and temperature regulation, 603
- Synaptic activity suppression of and CNS thermoreceptors, 645
- Synaptic blockade thermosensitivity during, 650
- Synaptic transmission and membrane fusion, 209
- Synexin and secretory exocytosis, 235
- T
- Temperature control see Neurotransmitters in temperature control
- Temperature receptors in the central nervous system central thermal stimulation, 640-42
- preoptic thermosensitive neurons, 645-49
- thermoreceptor electrophysiology, 649-50
- thermosensitive neurons, 642-45
- Temperature regulation see Integration and central processing
- Terbium modeling membrane fusion, 203
- Tetradecanoyl phorbol acetate and the production of oxy-radicals, 659
- role of in intracellular pH regulation, 370-71
- Tetrahymena* vesicular swelling during exocytosis, 168
- Tetrasaccharide osmotic forces in exocytosis, 184
- Tetrodotoxin and the calcium channel as messenger for GnRH, 504
- Thalamic nuclei and cutaneous thermoreceptors, 631
- Thalamus and processing of thermal information, 598-99
- Theophylline and pH in epithelial cells, 384
- Thermal homeostasis and temperature regulation, 607
- Thermal stimulation see Cutaneous temperature receptors
- Thermal transduction and cutaneous temperature, 630
- Thermogenesis and the PO/AH in mammals, 640
- Thermoreceptors and temperature regulation, 597
- see also Cutaneous temperature receptors
- Thermoregulation and bombesin, 619
- Thermoregulatory motor systems see Integration and central processing
- Thermoregulatory responses hypothalamic neuronal control of figure, 640
- Thermoregulatory stimuli responses of hypothalamic neurons to, 601
- Thermosensitive neurons role in thermal integration, 639
- Thiobarbituric acid and hyperoxia, 708
- Thiols in smoggy air, 661
- Thiourea and free radical formation in the lung, 682
- Thrombin and the endothelial cell surface, 280
- and endothelium-dependent responses, 316
- inactivation and the endothelial cell surface, 290
- and secretory exocytosis, 232
- and vascular prostaglandin metabolism, 251
- Thromboxane A₂ and hypoxia, 41
- and endothelial biogenic amines, 342
- metabolism and hypoxia, 39
- Thymocytes and pH-mediated cell regulation, 392
- Thyroid hormones altering GH secretion, 578
- hypothalamic somatostatin function, 560
- Thyroid stimulating hormone and opioid peptides, 529-30
- Thyroliberin see Thyrotropin releasing hormone stimulation
- Thyrotropin and intravenous injection of neurotensin, 545
- and luteinizing hormone injection of substance P, 540
- Thyrotropin releasing hormone stimulation of pituitary hormone secretion
- biphasic prolactin secretion, 520-22
- cellular Ca²⁺ mobilization, 517-18
- model of TRH action, 522-23
- and Ca²⁺, 518-19
- and phosphoinositides, 516-17
- and protein phosphorylation, 519-20
- Tissue specificity and gene expression, 439
- α -Tocopherol deficiency in premature humans, 699
- Toxicity see also Free radical toxicity in lung, Pulmonary oxygen toxicity
- Tracer substance transients in and capillary endothelial transport, 330
- Transcytosis in epithelia, 159
- Transduction and thermal sensitivity, 631-33
- Transendothelial channels and the brain capillaries, 241
- Transendothelial exchange models and capillary endothelial transport, 322-24

- Transepithelial acid transport and pH regulation, 384-86
- Transepithelial calcium transport and renal inositol phospholipids, 60
- Transepithelial H^+ transport by exocytosis and endocytosis apical plasma membrane, 154-57
- luminal membrane, 156-57
- pathways of endocytosis and exocytosis, 159-60
- role of exocytosis, 158-59
- signals for membrane fusion, 157-58
- Transferase enzyme and renal inositol phospholipids, 53
- Transferrin and bactericidal oxidant production, 673
- and the endothelial cell surface, 284
- Transmembrane signalling by growth factors, 364-65
- Transport and ATP, 24
- mechanisms of across the capillary endothelial barrier, 326-28
- proteins and the endothelial cell surface, 284
- and exocytosis, 225
- and hormonal regulation of epithelial transport, 213
- relationship between metabolism in brain capillaries, 245
- see also Ca^{2+} /cAMP intestinal transport
- Hormonal regulation of epithelial transport
- Transporter kinetics estimation of with indicator dilution, 328-32
- TRH thermal effects of, 615
- Tricarboxylic acid and ATP in renal function, 25
- Trifluoperazine and mechanism of action of GnRH, 506
- and secretory exocytosis, 233
- Trigeminal nucleus and temperature regulation, 597-98
- Triggering as stage of membrane fusion, 202
- Triglycerides in chylomicrons, 120
- Triphenylmethyl phosphonium and anoxia, 43
- Troponin C and pH-mediated cell regulation, 393
- Trypsin and hormonal regulation of epithelial transport, 216
- in neural grafting, 450
- TSH regulation role of somatostatin in, 559-60
- TSH secretion and somatostatin mediation of neuropharmacological effects on, 557-58
- Tubular respiration and ATP in renal function, 19
- Tumor promotion and irreversible injury following ischemia, 38
- Tumors and abnormal production of factors with growth hormone-releasing activity, 569
- TPA as promoter of, 660
- Tyrosine hydroxylase and secretory exocytosis, 232
- Tyrosine kinase and growth factors and pH, 371
- Tyrosine-specific protein phosphorylations and intracellular pH regulation, 363-72
- U
- Ultradian rhythm of GH secretion role of somatostatin, 555
- Urechis and fertilization potential, 193
- Urinary epithelia exocytic insertion of H^+ ATPases into, 154
- Urinary tract infections use of nitrofurantoin in and acute/chronic lung damage, 683
- V
- Vagal/cholinergic stimulation acid secretory response, 89
- Valinomycin and osmotic forces in exocytosis, 178
- Vanadate and organelle acidification, 406
- Vascular congestion and pulmonary oxygen toxicity, 721
- Vascular endothelium see Functions of endothelial cell surface
- Vascular obstruction and stagnant hypoxia, 33
- Vascular prostaglandin metabolism asymmetric release of prostacyclin from endothelia, 257
- PGI₂ synthesis, 255
- prostacyclin synthesis, 255-57
- prostaglandin metabolism, 251-53
- prostaglandins produced by vasculature, 253-54
- Vascular smooth muscle relaxations caused by acetylcholine, 311-12
- see also Vascular prostaglandin metabolism
- Vascular smooth muscle phenotype see Arterial cell interactions
- Vasculature prostaglandins produced by, 253-54
- Vasoactive intestinal peptide (VIP) receptors for in pancreas, 113
- and secretagogue receptors, 106
- and thyrotropin-releasing hormone, 520
- Vasoactive substances and pulmonary endothelium, 268
- Vasoconstrictor noradrenergic fibers and temperature regulation, 604
- Vasodilation in ischemia, 34
- Vasodilator and activities of pulmonary endothelium, 265
- Vasopressin and endothelium-dependent responses, 315
- and epithelial H^+ transport and exocytosis, 155
- and formation of inositol phosphates, 64
- and hormonal regulation of transport, 214
- and interaction with CRF, 480

- and posterior pituitary function, 531
- and temperature control, 613
- Vasopressin-treatment and renal inositol phospholipids, 58
- Vasospasm and endothelium-dependent responses, 316
- Veratridine and the calcium channel as messenger for GnRH, 504
- Vertebrate muscle see Intracellular pH regulation
- Vertebrate thermal stimulation role of rostral brain stem in, 642
- Very low density lipoproteins liver as site of terminal catabolism, 119
- Vesicle swelling during exocytosis, 167-69
- Vesicular deformation modeling membrane fusion, 205
- Vessel wall see Endothelial cells
- Viruses fusion proteins of and electrical regulation, 192 and organelle acidification, 403
- Viscosity and osmotic swelling, 169
- Vitamin D3 synthesis and hypoxia, 39
- Voltage-dependence mechanism of of sperm-egg fusion, 196
- W
- Warm-receptors and dynamic responses to thermal stimulus, 628
- Watanabe hereditary hyperlipidemic and uptake of very low density lipoprotein, 122
- Water permeability response and hormonal regulation of transport, 214
- Women postmenopausal opioids inhibiting, 531
- X
- Xanthine dehydrogenase during hypoxia, 44
- Xanthine oxidase and lung damage, 716
- Xenobiotic compounds and free radical toxicity, 681
- Xenobiotics and antioxidant defenses in the lung, 696 causing free radical production, 660 and lipid peroxidation, 689 and the production of oxy-radicals, 659
- Y
- Yeast alcohol dehydrogenase and gonadotropin releasing hormone, 498
- Z
- Zwitterionic lipids and stable membrane apposition, 203

